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Education Technology: A Story of Faith, Community, and a Vision for Change

Brenda Becker
bbecke4@uwo.ca

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Abstract

This Organizational Improvement Plan (OIP) explores technology use at Traditional Christian School (a pseudonym), a small, independent Christian school in British Columbia. The Problem of Practice (PoP) recognizes a gap between how teachers currently use education technology (EdTech) and how it could be used for greater impact. In this self-proclaimed traditional school, technology is primarily used to support teacher-directed learning; however, with teachers as change agents, effective integration of EdTech could enable a shift to student-centredness that gives students agency over their learning. Nevertheless, understanding of the transformative nature of EdTech is minimally evident at TCS, possibly because barriers based on beliefs about technology use can impede teachers from effective EdTech integration. Within a theoretical framework of social constructivism, chosen because it frames the construction of knowledge in a community of learners, a plan is proposed to change how EdTech is integrated into teaching and learning. Using Lewin's Three-Stage Unfreeze-Change-Refreeze Change Model, teachers will be challenged to examine their teaching practices and their beliefs about EdTech. The solution described in this OIP is for teachers to engage in a continuous learning process, using the Plan, Do, Study, Act (PDSA) cycle to develop their own Technology, Pedagogy, and Content Knowledge (TPACK), enabling them to utilize EdTech to support student-centred learning effectively. Challenging teachers' beliefs requires transformational servant leadership that inspires a vision of a more desirable future while caring deeply for the individuals implementing change, serving both the organization and its people equally with trustworthiness and humility.

Keywords: education technology, TPACK, student-centred learning, transformational servant leadership, second-order barriers, Lewin's Three-Stage Change model, PDSA

Executive Summary

The prevalence of technology in the 21st century cannot be disregarded. Yet, as Fullan (2013) indicated, technology use for education has lagged both personal use and other industries in many ways. He suggested that although teachers use technology personally, they may resist using technology as part of teaching and learning. This Organizational Improvement Plan (OIP) is intended to provide teachers with a process of engaging with education technology (EdTech) in a focussed way to transform teaching and learning. Specifically, this OIP addresses EdTech in a small, independent Christian School in British Columbia (BC).

The first chapter contextualizes the Problem of Practice within Traditional Christian School (TCS, a pseudonym), a conservative school that values traditional approaches to teaching and learning where changes are adopted slowly and cautiously, with a wait-and-see approach juxtaposed with the forward-moving nature of technology. There follows a discussion of the leadership-focussed vision for change, the priorities for change, and the guiding questions for the OIP. Also introduced are the conceptual frameworks of Technology, Pedagogy, and Content Knowledge (TPACK) that describes how teachers interact with EdTech and the Substitution, Augmentation, Modification, and Redefinition (SAMR) model that provides a taxonomy for increasingly integrated EdTech use. The chapter concludes with an analysis of the organization's readiness for change.

Two approaches frame the Problem of Practice (PoP): the theoretical framework of social constructivism and the transformational servant leadership framework. Constructivism posits that learners need to be active constructors of their own knowledge, which is an appropriate approach to technology because, according to Olofson et al. (2016), it facilitates the construction of new paradigms and new knowledge. The choice of *social* constructivism, defined as actively constructing knowledge through collaboration, focusses on teaching and learning as social activities (Holdsworth & Maynes, 2017) and aligns with the value TCS puts on community.

The leadership framework is an amalgamation of transformational and servant leadership that reflects both the change leader and the organization. Leaders at this Christian school are expected to prioritize service to the community, and the primary examples of servant leadership are Jesus and Paul in the Bible (Agosto, 2005; Davis, 2017). For this OIP, transformational leadership is also necessary to inspire teachers with a clear and motivating vision for the future to challenge them to examine their beliefs about teaching and learning.

Chapter Two continues the discussion of leadership, further defining the transformational servant leadership that will enable the change agent to lead teachers through a process designed to challenge their beliefs about teaching and learning. This chapter also introduces Lewin's Three-Stage Change Model, which will be used to guide the change process and describes how Nadler and Tushman's (1980) Congruence Model is used to analyze the organization's readiness for change. Three possible change plans are described, focussing on how each would impact the school's approach to EdTech and why the chosen approach best meets the needs of the school. Finally, there is a discussion of the ethical issues that need to be considered in implementing this change program.

Chapter Three begins by describing the chosen change plan and its implementation in detail. Using Lewin's Change Model, Chapter Three describes the unfreezing, the cognitive restructuring, and the refreezing that will happen. Monitoring and evaluating the change plan will be guided by the Plan, Do, Study, Act (PDSA) cycle that the teachers will use as they focus on continuous improvement and that the change leader will use to ensure the program is progressing accordingly. Ford and Ford (1995) stated that change happens through communication; thus, the communication plan is intended not only to disseminate information, but to engage teachers in meaningful conversations that will empower them to make changes to their teaching practice.

Three key ideas are prevalent throughout this OIP. The first is Fullan's (2013) assertion that teachers, not EdTech, are change agents. This notion is implicit in the focus on teachers as agents of

their own personal and professional growth. Though the goal is to shift from teacher-directed to student-centred learning, the teachers remain the learning guides. It is the process of empowering teachers to be agents of their own change that makes this a leadership Problem of Practice beyond merely implementing a school technology program. The second key idea is based on Ertmer's (1999) discussion of second-order barriers—often rooted in teachers' self-efficacy regarding EdTech, their pedagogical beliefs, and their beliefs about the teacher's role—that may impede them from integrating EdTech effectively. Teachers' beliefs need to be identified, addressed, and possibly overcome for them to be willing to integrate EdTech into their teaching. The third key idea is Schein's (1996, 2010) interpretation of Lewin's Three-Stage Change Model. The simple Unfreeze→Change→Refreeze model encompasses the change plan, the monitoring and evaluation plan, and the communication plan.

The OIP concludes by describing the next steps and future considerations that will begin the process of implementing this Organizational Improvement Plan. This final section describes the impact of the COVID-19 pandemic on EdTech at TCS and outlines the organizational decisions and strategic plans that need to be made before implementation can begin.

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Acronyms

ACE (Accelerated Christian Education)

BC (British Columbia)

EdTech (Education Technology)

LMS (Learning Management System)

MoE (Ministry of Education)

OIP (Organizational Improvement Plan)

PDSA (Plan, Do, Study, Act)

PoP (Problem of Practice)

SAMR (Substitution, Augmentation, Modification, Redefinition)

SMART (Specific, Measurable, Attainable, Realistic, Timely)

TCS (Traditional Christian School)

TPACK (Technological, Pedagogical, and Content Knowledge)

Chapter 1: Introduction and Problem

Education Technology (EdTech) is recognized as an invaluable tool to support teaching and learning in the 21st century (Koh et al., 2017; Lawlor et al., 2018); however, EdTech use is inconsistent throughout Traditional Christian School (TCS). The Organizational Improvement Plan (OIP) proposed in the following chapters seeks to improve how EdTech is used at TCS by examining teachers' practices and empowering them to make changes, not only to how they use EdTech but also to what they believe about its capacity to transform teaching and learning.

Chapter One of this OIP begins with an introduction to TCS by describing its history, culture, and values to provide an organizational context for the program that will call for changes to teachers' implementation of EdTech and their beliefs about its use. Next, I will outline the leadership-focussed vision for change that describes the more desirable future state, followed by my personal leadership position and the leadership lens through which I will approach this change program. After defining and describing my leadership and how it aligns with the values of TCS, I will address the Problem of Practice (PoP) that is the focus of this OIP, frame it within an intentionally chosen theoretical framework, and discuss guiding questions that emerge from the PoP. Finally, the chapter ends with an analysis of the organization's change readiness.

Organizational Context

Traditional Christian School (TCS) is a small Christian school of approximately 650 students in British Columbia. It is an independent school run by an arms-length board and is a member of an association of schools that provides mutual support and a representative voice in the provincial government, but not oversight or governance.

TCS was established in 1978 by a church that sought to provide its families with an option for schooling with a Christian curriculum. It adopted the Accelerated Christian Education (ACE) curriculum, an individualized, mastery-based program developed by Donald Howard in Dallas, Texas, designed to be

implemented by unqualified volunteers with minimal resources (Laats, 2010). TCS continued to use this program until 1994 when it adopted the provincial curriculum. In the beginning, the school was attended and staffed exclusively by church members following the ACE model. Still, by the late 1980s, TCS began accepting students from local churches, provided the parents agreed with the statement of faith and supported the school's mission, vision, and values.

The school has had several periods of substantial growth over its history, but it has retained its culture and distinction despite the influx of students and families from outside the parent church community. This retention of culture and identity is in part due to the school's continued and intentional commitment to its historical values as well as the continued involvement of founding members of the school in the current community as emeritus board members, assembly speakers, and parents and grandparents of staff and students. Most significantly, TCS has retained its culture and values because the current principal began working at the school in 1984, quickly becoming part of the administration and helping the school for the past 28 years.

TCS as a Conservative Organization

The conservative values of gradual change, evolved wisdom, and cultural continuity (Guterk, 2013; Claassen, 2011; Hibbing et al., 2014) are consistently evident at TCS. The explicitly conservative nature of the school is an ongoing reflection of the original intent to create an alternative to the liberal public-school system, and it draws families who align with this worldview. TCS takes a wait-and-see approach to educational change; that is, it has intentionally eschewed the notion of current best practice because good teaching practices are considered timeless and current ideas should be adopted cautiously. Consequently, suggestions for implementing new programs are always countered by referring to past wisdom and reusing previous ideas.

Technology

Although fundamentalist in philosophy and curricular content, the ACE system was innovative in its use of personal computers in its “School of Tomorrow” (Laats, 2010; Walford, 2002), an early model of current online learning that used technology to facilitate personalized learning. Thus, technology has always been part of the education program at TCS. Within its limited resources, the school has continued to move forward with technology, as evidenced by interactive whiteboards, the use of a learning management system (LMS), and a locally developed technology course. In keeping with its conservative values, the school uses technology “as an instrument to make instruction in the traditional subjects more efficient rather than to employ it to transform or radically alter the curriculum” (Gutek, 2013, p. 257). This distinction—technology use for *continuity* of past practices, rather than technology as *reforming* past practices—is a key indicator of the school’s conservative approach to technology.

Teaching and Learning

Teaching and learning at TCS are primarily teacher-directed. Traditional, teacher-directed classrooms structure learning activities around the belief that the teacher is the primary knowledge authority and take a behaviourist approach whereby it is expected that students will learn through repetition and reinforcement (Hsu, 2016; Lewis et al., 2019; Tondeur et al., 2016). Teachers care deeply about their students’ learning, causing them to hold tightly to the notion that a caring teacher is one who directly manages students’ learning.

The traditional approach to teaching and learning at TCS conflicts directly with 21st century learning that espouses collaboration, creativity, critical thinking, and self-direction. As Soulé and Warrick (2015) indicated, these skills are not new, but there is a new need to excel at non-traditional work facilitated by technology. However, teaching and learning at TCS still reflects what Pedersen and Liu (2003) described as teacher-directed instruction wherein learning activities and assessment are devised by the teacher to meet objectives set by the teacher. In contrast, student-centred learning is inquiry-

based, wherein the students set a central question that guides the learning activities. Kim et al. (2013) suggested that the distinction between teacher-directed and student-centred learning is an indicator of teacher beliefs about teaching and learning that must be addressed in the process of implementing effective EdTech programs.

Vision, Mission, and Values

The school's primary mission is to provide Christian education for Christian families, aligning both church and home by reinforcing biblical values and Godly character. The school's literature explicitly states that there is an emphasis on traditional aspects of learning—though there is no definition of the phrase—in a caring and nurturing environment. There is a strong and consistent emphasis on the Bible as foundational to all aspects of life, including teacher-directed character development through learning activities. TCS is committed to making all decisions through the lens of biblical values and principles; moreover, students and staff are continuously encouraged to turn to the Bible for guidance and wisdom.

More than just providing Christian education, TCS was founded on and continues to uphold a commitment to providing *affordable* Christian education by maintaining annual tuition that is lower than most comparable schools in the area. This funding impacts the school's ability to resource EdTech, both in purchasing technology and in supporting professional development.

Leadership Approaches

Buchanan and Chapman (2014) described leadership in a faith-based school as an amalgamation of educational leadership and Christian leadership. At TCS, this form of leadership requires an evident commitment to personal faith and theology that aligns with the organization's statements of faith. Most importantly, Jesus Christ is recognized as the model for leadership, and the description of the ideal leader is found in Matthew 20:27, which says that "whoever wants to become great among you must be your servant" (*The Holy Bible: New International Version*, 1973/2005). This statement underscores the

virtue of humility expected from a leader and the importance of serving those one leads. Covey (2006) emphasized that leadership is gained through the merits of integrity and trustworthiness and that successful servant leaders will inspire others to be servant leaders. This leadership is the example of both Jesus and the Apostle Paul in the Bible, that those who commit their lives to serving others will be followed and emulated (Davis, 2017; Agosto, 2005). Hence, servant leadership at Traditional Christian School is a deeply and fervently held belief that is inextricably part of the essence of the school's identity and those who work there.

Leadership at TCS also has a paternalistic quality, reflective of Gutek's (2013) description of a traditional family-style society that provides its members with a clear identity and purpose and is headed by a benevolent father figure. Consistent with its conservative values, the leadership hierarchy unambiguously places the principal as the ultimate authority in all decisions, and because the principal has served the school for decades, his leadership style impacts all decisions, and any conflicts ultimately concede to his authority.

Teachers as Stakeholders

The teachers at TCS are highly committed to the school, as evidenced by the fact that more than a third of the teachers have taught at the school for over twenty years, many have children who attend the school, some are alumni, and most have never worked elsewhere. Consequently, teachers are the primary stakeholders in this OIP. As stakeholders, they occupy two positions: those who are asked to implement the EdTech change program and those who will be challenged to make changes to their beliefs about teaching and learning; in essence, they are both the receivers of the change and the implementers of the change. Throughout this OIP, both these stakeholder roles will be addressed in planning and implementing the change program.

Leadership Position and Lens Statement

Randle and Stroink (2018) defined systems thinking as seeing the interrelatedness, interconnectedness, and interdependence holistically within complex systems. This statement describes how I see my role: I approach school leadership with the vision of many moving microcosms, inhabited by teachers leading their own microcosms, all of which bump against each other, merge, disengage, then reorder. Leading TCS requires the humility of a servant leader and the charisma of a transformational leader.

Belief Statements

I believe the most important characteristic of a leader is their commitment to empowering the people they lead. van Dierendonck (2011) attributed empowerment to servant leaders who enable followers to develop their personal power through actions that indicate belief in people's intrinsic worth. Covey (2006) stated that empowerment is the result of a leader who has included others in developing a common vision and value system through which they can achieve their goals. Thus, I intend to be a leader who empowers others by enhancing their capacity to accomplish their goals (Ebener & O'Connell, 2010) and to see within themselves the ability to achieve the dreams they have been inspired to have. My leadership position is informed by many years of being a follower; thus, I strive to be the transformational servant leader I wanted to follow.

Agency and Authority

My position at TCS is the vice-principal of the secondary division: Grades 7 to 12. The most important requirement for any leader at TCS is alignment with its vision, mission, and values; that is, it is crucial to the board that leaders agree wholeheartedly with the organization's statement of faith and are committed to the spiritual mission of the school. It is considered that strong personal faith and a desire to serve the community are of primary importance as leadership attributes, and all other necessary skills can be learned. My formal role defines my positional authority, but my agency comes most importantly from my evident alliance with the school's values and, of almost equal importance, my

longstanding association with the school. My continued and explicit commitment to alignment with the school's vision and mission assures the principal and the board that my motives, ideas, and innovations are intended to move the school towards excellence while maintaining the uniqueness of the culture.

Leadership Lens

It is important to me that I espouse the values of servant leadership so highly valued by TCS and by my commitment to base my leadership on biblical values. However, it is also important to me that my leadership reflects my own transformational leadership style, as well as what is valued by the organization.

Servant Leadership

I believe that the inward convictions of a leader will manifest as outward behaviours. The inward convictions of Christian leadership are based on the commitment to model one's life after Jesus Christ's example, which is characterized by serving others (Greenleaf, 1977; Davis, 2017). Greenleaf (1977) first articulated servant leadership as the desire to empower personal growth in people which, in turn, will lead to organizational growth and improvement (Ebener & O'Connell, 2010; Davis, 2017; van Dierendonck, 2010). TCS values the notion of servanthood highly and expects that leaders should put the needs of others above personal ambition or self-aggrandizement. In a Christian organization, this orientation is seen as being pastoral.

There are two specific aspects of servant leadership that resonate with me. The first is the empowerment of others. Ebener and O'Connell (2010) indicated that a servant leader endeavours to discern the strengths of others to empower them to greater achievement and self-fulfilment, and Cerit (2009) suggested that servant leaders who demonstrate trust in teachers by including them in decision-making enable them to be more effective and, thus, can improve teachers' job satisfaction. This aspect of servant leadership requires humility and willingness to relinquish activities that others could undertake, valuing others' personal growth over the accomplishment of tasks. The second is the

defining characteristic of a servant leader as one who serves the community by placing others first (Davis, 2017). van Dierendonck (2010) stated that creating a community out of an organization requires the servant leader to move beyond empowering individuals' growth to prioritize creating a safe and caring community based on interpersonal trust. Although communities can be created within an organization without the leader's intervention, leaders can create a sense of unified purpose by elevating day-to-day work to the level of a calling (van Dierendonck, 2010). This elevation is accomplished by a leader who makes people feel valued by cultivating a community-first environment, and individuals who feel called to their work within an organization will develop a community that reflects the altruism of servant leadership (Davis, 2017).

Transformational Leadership

It could be argued, however, that servant leadership is too passive to lead change (Cerit, 2009). In my leadership philosophy, the inward desire to serve manifests outwardly as transformational leadership. A good transformational leader is concerned for both individuals and the organization as a whole (Caldwell et al., 2012); they are inspirational instructional leaders but also good managers because the day-to-day tasks of a school must be well-managed for effective leadership to take place (Hauserman & Stick, 2013; Leithwood, 2015); they are charismatic visionaries who are well able to articulate a compelling vision of the future (Northouse, 2019; Gumusluoglu & Ilsev, 2009; Caldwell et al., 2012) and who "transform followers' self-concepts and...link the identity of the followers to the collective identity of the organization" (Northouse, 2019, p. 168). In this way, the transformational leader inspires followers to value the success of the organization as a reflection of their own success and creates a culture that fosters self-agency and the desire to create a whole that is better than the sum of its parts (Northouse, 2019).

Transformational Servant Leadership

Inspired by Caldwell et al. (2012), my leadership approach is a blend of transformational and servant leadership, emphasizing the synergy between transformational leadership that inspires others to achieve their best and servant leadership that puts what is best for the community above all other considerations. It could be argued that servant leadership and transformational leadership are contradictory because of the risk that transformational leaders' focus on organizational success can override care for people (Northouse, 2019); however, it is incumbent on the leader, to ensure that the needs of the organization do not override the value of the individuals who make up the organization and that meeting the needs of the individuals does not undermine the growth and success of the organization.

Hoption et al. (2013) focussed on a different element of transformational leadership. They suggested that self-deprecating humour is a tool for transformational leaders to avoid the pervasive and detrimental criticism of self-promotion. A leader who uses self-deprecating humour well conveys humility and vulnerability while de-emphasizing status distinctions. As a leader, I frequently use self-deprecating humour because it puts people at their ease by acknowledging that I do not consider that positional authority implies personal value. The authors emphasized that this form of humour, used appropriately, suggests that the leader can take a humble and honest approach to leadership. Fortunately, the authors' research also indicates that the leader is not required to actually be funny, just judiciously self-deprecating.

Successful leadership at TCS is based on alignment with the school's mission, vision, and values, and this alignment must be evident in all decisions, actions, and change initiatives. Individual leadership approaches must start with the biblical edict to "Love the Lord your God with all your heart and with all your soul and with all your mind. ... And Love your neighbour as yourself" (*The Holy Bible: New International Version*, 1973/2005, Matthew 22:37, 39). On that foundation, transformational servant

leadership will facilitate improvement, growth, and progress. Thus, my philosophy of leadership is that education leaders inspire teachers to continue to challenge themselves to improve for the sake of the students they teach.

Leadership Problem of Practice

Ertmer and Ottenbreit-Leftwich (2010) stated that in the 21st century, it is not enough to see technology use as supplemental to good teaching; it must be treated as an essential component. In other words, “effective teaching requires effective technology use” (Ertmer & Ottenbreit-Leftwich, 2010, p. 256). Teachers at TCS have embraced EdTech to varying degrees, and the speed and willingness to engage has generally reflected their own personal interest in technology. There is evidence in teachers’ planning, learning activities, and professional dialogue to suggest they understand that EdTech enhances access to resources, improves communication, and increases student engagement. However, there is little evidence that, as Fullan (2013) suggested, EdTech can be used to transform teaching and learning. Thus, the Problem of Practice is empowering teachers at TCS to understand the capacity of education technology to shift the focus of their practice from teacher-directed to student-centred learning. As vice-principal, my primary role is to be the academic leader, and, as such, I have both the mandate and positional authority to implement a change program that enables teachers to learn new technologies and implement new EdTech pedagogies.

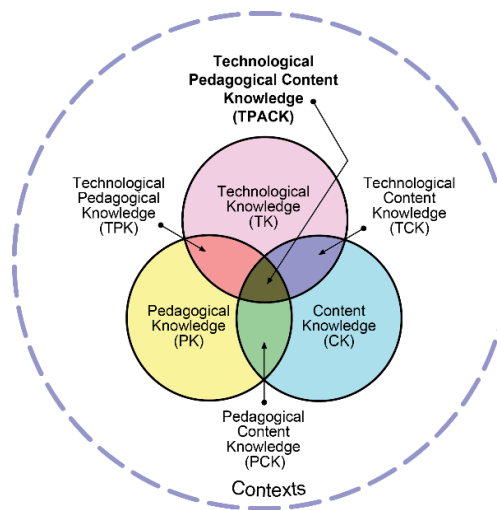
Underlying the Problem of Practice is understanding the importance of technology in developing 21st century skills. Technology use is a key to developing the flexible innovation and problem-solving skills expected of 21st century learners (Olofson et al., 2016; Lewis et al., 2019; Lawlor et al., 2018). This idea is echoed in Ertmer and Ottenbreit-Leftwich’s (2010) strong statement that 21st century teaching and learning must include the effective use of technology. The conceptual framework that connects teaching with technology is TPACK, which is the technological pedagogical and content knowledge framework. As Figure 1 shows, TPACK is the overlapping of three distinct areas of teacher knowledge:

content knowledge, pedagogical knowledge, and technological knowledge. By representing these three knowledge areas as a Venn diagram, their interconnectedness and interdependence are evident.

Teachers at TCS have Pedagogical Knowledge (PK), Content Knowledge (CK), and Pedagogical Content Knowledge (PCK); however, there is little evidence of the Technological Pedagogical Content Knowledge (TPACK) needed to use technology effectively to meet the needs of 21st century learning (Graham, 2011; Olofson et al., 2016).

Figure 1

TPACK Model



Note. This image is reproduced by permission of the publisher. From *Using the TPACK Image*, by M. Koehler, 2011, (<http://tpack.org>). Copyright 2012 by tpack.org.

To determine that this is a Problem of Practice, I developed the model in Figure 2 to identify TPACK use. Observationally, I identified that most teachers are on the left side of the model, and few are on the right.

that is technology for Modification and Redefinition (Puentedura, 2006). Schwartz's (2014) model differentiates between technology use and technology integration. On the "less" side of the continuum, the term technology *use* describes generally haphazard, unintentional, and content-focussed learning activities; on the "more" side, technology *integration* describes intentional, constructivist, and learning-focussed activities (Schwartz, 2014).

Through observation of classroom practices and learning activities, it is evident that most teachers use their available technology to enhance their teaching and learning; for example, a website may be used for math practice, rather than worksheets, or YouTube videos may be used to augment instruction or review concepts. Less common are learning activities that are modified or redesigned by technology, such as using Google Docs for real-time collaboration from different locations or exploring theoretical math problems using programs such as Desmos. The observation of EdTech use in classroom practices and learning activities may not seem on the surface to indicate any Problem of Practice because teachers and students are using technology for learning activities; however, on closer observation, the technology use is low-level and used to support teacher-directed activities.

This is a leadership Problem of Practice rather than merely a program implementation because teachers need to be empowered by the change leader to use technology to transform teaching and learning. Ertmer (1999, 2005) suggested that this problem is complex and requires understanding first- and second-order barriers to technology implementation and how teacher beliefs about teacher-directed versus student-centred learning affect technology use. However, there is an expectation that TCS prepares its students for post-secondary life by teaching 21st century skills, and it is important to address the Problem of Practice—empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning.

Framing the Problem of Practice

The Problem of Practice is framed within the paradigm of technology as an intrinsic component of 21st century learning and within the theoretical framework of social constructivism. Koh et al. (2017) and Soulé and Warrick (2015) described 21st century skills as those needed to collaborate effectively, solve complex problems, communicate across various media, and be a self-directed learner. Technology underpins all elements of 21st century learning, but it is the learning experiences that define 21st century learning, not technology (Koh et al., 2017). Levin and Schrum (2013) stated that leveraging technology to teach 21st century skills requires teachers to think differently about the purpose of technology if students are to learn to think more critically and be more innovative (Hsu, 2016).

Social Constructivism as the Theoretical Framework

Constructivism is predicated on the epistemological notion that “we are active creators of our own knowledge” (Bada, 2015, p. 67), rather than passive receivers of someone else’s knowledge (Green & Gredler, 2002). Though a seemingly simple notion, its impact on teaching and learning is significant and far-reaching. It requires students to make sense of the knowledge they are acquiring, and it requires teachers to make the space for students to internalize what they are learning. Constructivism situates learning within the individual, as it focusses on the internal process of the learner as they contextualize new knowledge within previous knowledge and experience (Green & Gredler, 2002; Dagar & Yadav, 2016). Constructivism is seen to develop authentic learning experiences that require the learner to question previously held ideas and change their models of understanding. In the process, they construct new paradigms and interpretations of reality (Bada, 2015) that are evident in learning activities such as project-based learning, collaborative group work, case studies, all of which are familiar to teachers trained since Vygotsky (Dagar & Yadav, 2016). In essence, constructivism suggests that students have the agency to understand their own learning process and connect it to their lived experience (Green & Gredler, 2002; Windschitl, 2002).

Technology, in general, allows the user to construct their own knowledge, personalizing digital devices in myriad ways, making the theoretical framework of constructivism appropriate to addressing this PoP (Olofson et al., 2016). However, because of the breadth and variance of constructivist theories, it is necessary to be more specific in the discussion as it pertains to EdTech; Olofson et al. (2016) stated that radical constructivism reflects the individualism of constructing one's own meaning from individual experiences whereas social constructivism is described by Green and Gredler (2002) as reflecting socially shared processes of constructing meaning within a community. These two extremes of constructivism are juxtaposed as a reflection of the individualist nature of technology and the social nature of teaching and learning.

Social constructivism states that not only is learning actively constructed but it is also constructed within a community of practice that values both the novice and the expert, encouraging each to learn from the other (Green & Gredler, 2002). Juxtaposed to individualized skill-building activities, Windschitl (2002) suggested that socio-cultural activities enable the evolution of understanding within various learning communities, each serving to shape the learning experience. Holdsworth and Maynes (2017) stated that teaching and learning are fundamentally social activities. Green and Gredler (2002) described social constructivist classrooms as those in which knowledge and understanding are co-created between the teacher and students and between the students themselves. At its most fundamental, constructivism is about constructing knowledge, which is then used to solve problems and, thus, create new knowledge (Dagar & Yadav, 2016; Perkins, 2006).

Technology use, however, can be seen as highly individualistic, and the image of a technologically advanced classroom is often one where students are sitting with their own devices, often wearing headphones, and interacting with no one. This classroom is a vision of radical constructivism, the most individualistic and solipsistic variation of constructivism, suggesting that all knowledge is created within the individual without social influence. Olofson et al. (2016) suggested that

radical constructivism is an appropriate framework for pedagogical technological knowledge because the learner's engagement with the technological environment is primarily informed and guided by their own knowledge and understanding. However, Vygotsky, the original social constructivist theorist, considered knowledge construction as "the social intersection of people, interactions that involve sharing, comparing, and debating among learners and mentors" (Dagar & Yadav, 2016, p. 2). In Vygotsky's vision of learning communities, EdTech would be used through collaborative and cooperative learning activities that would encourage students to construct knowledge together rather than individually.

Social Constructivism and the Problem of Practice

The lens of social constructivism enables one to see the gap between the current state and the more desirable future state. A classroom based on social constructivism reflects a community of learners in which all contributors have value in the learning process, recognizing differences of experience, culture, and prior knowledge as all contributing to the goal of learning (Zevenbergen, 1996; Slavich & Zimbardo, 2012). It must be noted, however, that constructivism is not customary pedagogy at TCS. Classrooms at TCS reflect a traditional, behaviourist approach to teaching where learning activities emphasize knowledge and skills (L'Ecuyer, 2014). Dagar and Yadav (2016) theorized that teachers would grasp the need for constructivism when they understand that behaviourism fails because it puts the responsibility for students' learning in the teachers' hands, rather than giving the agency of learning to the students.

There are certainly learning activities that resemble constructivist activities, such as group work, projects, and discussions of scaffolding learning. The resemblance to constructivism parallels the gap in the current and future states of EdTech integration; that is, teachers who use technology for low-level activities or to support teacher-directed learning may consider themselves EdTech users because they do not fully understand how technology can be used to empower students to actively construct their

own understanding that will lead to deeper and more meaningful learning experiences. Understanding social constructivism in relation to the use of EdTech will enable teachers to bridge this gap in their understanding regarding the capacity of technology to change teaching and learning.

Technology, Pedagogy, and Change

Fullan's (2013) notion of stratosphere as the confluence of technology, pedagogy, and change knowledge informs this Problem of Practice (PoP). In defining the stratosphere, the author imagines a world where technology is used as an intervention into the superficial, rote learning of historical schooling to engage both teacher and student in a joint exploration for deeper meaning. This kind of learning is the future, more desirable state imagined in the articulation of the PoP. The theoretical framework of social constructivism provides a broader lens to view EdTech, connecting theoretical approaches to technology to teaching and learning in the classroom. The complexity of this problem is in its nature; that is, it is a problem that focusses on teachers' beliefs about the purpose of technology and its impact on their pedagogy. However, that is what makes this problem worthwhile to address—that it asks how beliefs translate into actions and how to accurately interpret actions to determine underlying beliefs.

This Problem of Practice identifies the need to empower teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning. Walking through the TCS classrooms, it is evident that all teachers use technology in their learning activities: students all have laptops and classrooms are equipped with projectors that teachers use to project notes, videos, and other learning aids. However, there is little evidence that technology has a pedagogical purpose that transcends the convenience of researching on the internet rather than the encyclopedia. Ritzhaupt et al. (2012) averred that using technology to enhance lectures or make test-taking more efficient reinforces teacher-directed learning and indicates low-level technology use. Furthermore, Fullan (2013) made the distinction between the availability of technology, or low-level use,

and pedagogical use of technology, stating that “making digital devices available and helping teachers and students use them is the easy part—but it isn’t pedagogy” (p. 37). This description of the current state does not create a picture of poor teaching or disengaged learners; however, compared to the objectives of 21st century learning, the current state does not reach far enough into a future where teaching and learning are transformed by technology use. Hence, the PoP seeks to bridge the gap between using technology to facilitate learning activities and using technology to facilitate learning.

Guiding Questions Emerging from the Problem of Practice

Guiding questions arise from articulating the Problem of Practice and are designed to guide the research to identify possible solutions. This Problem of Practice focusses on the gap between the current state where technology is primarily used to support teacher-directed learning and the future state in which technology is used to support student-centred learning. The first question looks at the larger idea of 21st century learning by asking what exactly is the purpose of integrating education technology into pedagogy? In other words, what is better about the future than the past? The second question that arises focusses on the teachers who are expected to change. How do teacher beliefs about their role in teaching and learning impact their use of education technology? The final question again addresses barriers to change, namely, how can EdTech be resourced sufficiently to allow for an impactful and lasting change?

21st Century Learning and the Purpose of EdTech

Technology use and digital literacy are significant components of 21st century learning (Ananiadou & Claro, 2009; Voogt et al., 2013). However, merely identifying components of current pedagogy does not create a compelling reason to change one’s current practices, especially when the technology use is ubiquitous. Throughout the description of this Problem of Practice, there have been opposing ideas about EdTech: Puentedura’s (2006) distinction between technology for enhancement versus for transformation, Schwartz’s (2014) technology use versus integration, Fullan’s (2010)

technology use versus pedagogical change. TCS is a thriving school, successful largely because of its reputation of conservatism and reticence to change; hence, changing practices to be up to date with 21st century learning is unlikely to be a compelling reason for teachers to be willing to change, and teachers may find it easier to stay with tried-and-true methodologies and activities, rather than risk failure or take up valuable time learning new technologies (Ertmer & Ottenbreit-Leftwich, 2010).

Twenty-first-century pedagogy espouses student-centredness, using EdTech to engage in high-level learning through open-ended learning activities and constructivist pedagogies (Hsu, 2016; Kim et al., 2013). On the surface, this description seems in direct contrast to the traditional teaching methodologies valued at TCS; however, the guiding question is, can technology, itself, provide the sense of purpose teachers require to bridge the gap between traditional teacher-directed and 21st century student-centred learning?

Teacher Beliefs About EdTech

This line of inquiry will explore the effect of teacher beliefs about technology on their willingness to use EdTech. Ertmer (1999) defined two “orders” of teachers’ barriers to implementing technology for teaching and learning. Second-order barriers are personal, such as beliefs (Ertmer, 1999), and are within teachers’ control, such as their skills and their attitudes towards technology (Carver, 2016). Assuming teachers are adequately resourced, the suggestion is that the second-order barriers have the greatest impact on whether teachers will choose to implement EdTech in a way that changes their pedagogy and practice. Furthermore, to consider the fundamental and personal barriers teachers may have towards EdTech, it is necessary to look at their beliefs about teaching and learning, that is, their pedagogy (Kim et al., 2013; Hsu, 2016). In the context of this PoP, how does understanding teachers’ beliefs about students’ learning and knowledge acquisition give insight into how these beliefs transfer to beliefs about technology use (Hsu, 2016)? The literature suggests that self-efficacy beliefs, training, and administrative leadership and support may also be elements that may create barriers to

teacher use of EdTech, or alternately, may be predictors of successful integration (Hsu, 2016; Kafyulilo et al., 2016). Culture influences teachers' sense of self-efficacy (Glazier et al, 2017), their inclination to take risks (Holdsworth & Maynes, 2017; Windschitl, 2002), their individual readiness to change (Vakola, 2014), and their trust in school leaders (Vakola, 2014). Do the teachers at TCS have the self-efficacy to make significant changes to their pedagogy and practice? Do they have sufficient trust in the school leadership to be willing to take the necessary risks? At TCS, what factors have the greatest impact on teachers' willingness to use EdTech?

Resourcing Change

Ertmer (1999) described first-order barriers institutional and incremental and can be categorized as resourcing issues, such as inadequate hardware or software or an unreliable internet connection. These first-order barriers are outside the teachers' control, yet they can result in high levels of frustration for teachers who are resistant to using technology, and they become a justification for continued resistance (Carver, 2016; Kim et. al., 2013; Kihoza et al., 2016). Furthermore, first-order barriers can create a sense that the school's administration is unsupportive because it has not ensured teachers are adequately resourced (Hsu, 2016; Kafyulilo et al., 2016). There are two reasons why the school must ensure first-order, external issues are overcome. The first is so teachers can effectively use the technology they have. The second and more relevant to this line of inquiry is that removing first-order barriers enables identifying teachers whose real barriers are second order but masked by complaints about resourcing.

Leadership-Focussed Vision for Change

Proverbs 29:18 says, "Where there is no vision, the people perish" (*The Holy Bible: King James Version*, 1769/1985). In contrast, a vision gives life, and this vision for change is intended to give new life to EdTech-supported teaching and learning at TCS. As a transformational servant leader, it is my responsibility to articulate the vision that will inspire teachers to change their practices and beliefs and

empower them by validating expertise and agency within the change program (Barnett & McCormick, 2004; Hauserman & Stick, 2013). Though framed as a problem, identifying the need to help teachers understand how EdTech can transform their teaching comes from a desire to serve and empower them as people and help them grow personally and professionally. Furthermore, by extension, the greater organization with its various stakeholders will benefit from inspired teachers who will, in turn, inspire their students.

The Current Versus Future State

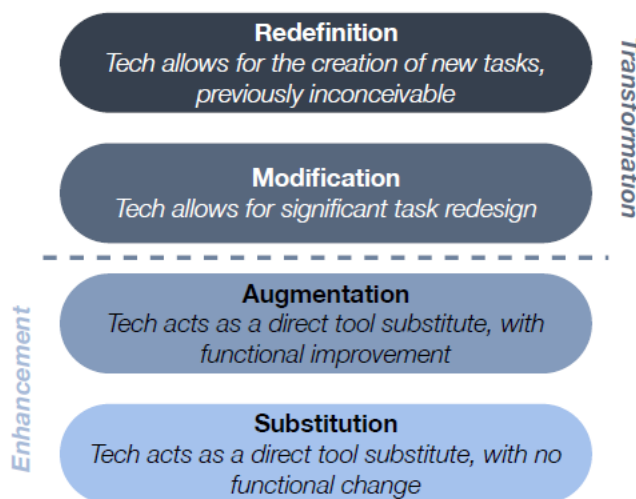
The current state of EdTech use at TCS is one where teachers have the autonomy to determine if and how they use technology in their teaching; however, the absence of a systemic approach to the integration of EdTech has created a significant divergence in how technology is used at TCS. The initial unforeseen lockdown of the COVID-19 crisis highlighted both the inconsistency of EdTech resourcing and the discrepancy in how teachers use technology in their teaching practice. It quickly became evident that many teachers were unprepared or unable to adjust their pedagogy to a technology-only medium. Ertmer and Ottenbreit-Leftwich (2010) suggested that teachers' beliefs about teacher-directed learning are evident in their low-level use of EdTech; similarly, it could be argued that teachers who strongly value traditional, teacher-directed learning activities will be reluctant to integrate EdTech. Thus, during at-home learning, TCS teachers who had previously limited their EdTech use also struggled to adapt their teacher-directed pedagogy to the new reality. Teachers who used technology more frequently adapted their pedagogy more easily, suggesting stronger underlying constructivist beliefs.

The future state is one where teachers integrate technology into a student-centred approach to learning, or what Pedersen and Liu (2003) referred to as a technology-enhanced, student-centred learning environment. Learning activities will reflect that teachers are conversant in various technologies and have developed pedagogies that engage with all four stages of the Puentedura's (2006) SAMR model as they are appropriate (see Figure 3). This change will result in technology-rich

classrooms where teachers facilitate students' construction of knowledge, focussing on problem-solving and higher-order thinking through a constructivist approach, which will, in turn, improve academic performance (Carver, 2016; Hsu, 2016).

Figure 3

Puentedura's Substitution, Augmentation, Modification, and Redefinition (SAMR) Model



Note. From *Transformation, technology, and education*, R. Puentedura, (2006).

(<http://hippasus.com/resources/tte/>). Copyright 2006 by Ruben R. Puentedura.

It can be observed that there is currently a gap in teachers' understanding of the difference between technology use and technology integration as Schwartz (2014) defined it; that is, though most teachers use technology to enhance their teaching practice, there is little awareness that technology can be integrated in a way that can transform their pedagogy from teacher-directed to student-centred. Teachers identify barriers to use as external elements, such as inconsistent resourcing and absence of technology support, and, although these are real and accurate concerns, it is also true that how teachers use their technology reveals their beliefs about technology and its purpose in teaching and learning (Ertmer, 1999; Carver, 2016). In staff meeting discussions, teachers often describe using technology to substitute for previous uses—such as using a word processor instead of paper—indicating that their

technology use increases efficiency but does not reflect a change in thinking or pedagogy. The gap would seem to be one of purpose, seen as the space between teachers' technology use as functional to improve efficiency and teachers' vision of technology implementation as a part of their pedagogy.

As a systems thinker (Levin & Schrum, 2013; Randle & Stroink, 2018), the gap between the current and future states described above is evident to me, but the hardworking teachers at TCS may not appreciate the perception of deficiency. As a transformational servant leader, I know that trust is built through individualized consideration; consequently, creating the future state will not only be approached from a systemic, whole-school perspective, but it will also be approached as inspiring a vision for improvement for individual teachers.

Priorities for Change

The main priority for change is to shift teacher beliefs about the purpose and value of technology use in their own pedagogy. Research suggests that how teachers use technology reflects their beliefs about the teacher's role in the classroom (Hsu, 2016; Pedersen & Liu, 2003; Ertmer, 2005); that is, "in general, low-level technology uses tend to be associated with teacher-centered practices while high-level uses tend to be associated with student-centered, or constructivist, practices" (Ertmer, 2005, p. 26). Within this statement is the notion that how EdTech is used can shift the locus of learning within the classroom, or, similarly, that teacher-directed pedagogy cannot allow for technology integration because it may conflict with the teacher's authority as the knowledge-holder in the classroom. With the prevalence of internet accessibility on so many different devices, it is difficult to imagine that teachers may still believe themselves the primary source of knowledge. Still, low-level technology use may indicate a mindset resistant to student-centred learning, and the change in this mindset is a priority in addressing this Problem of Practice.

TCS needs to ensure that teachers have reliable access to the technology they need to support their classroom practices in tandem with addressing teachers' mindsets towards technology and its

connection to student-centred learning. Access to technology is a first-order or external barrier teachers often identify as a reason they are unwilling to engage with technology implementation (Ertmer, 1999; Kihoza et al., 2016; Carver, 2016; Durff & Carter, 2019). It is crucial to deal with these barriers before shifting attention to the second-order barriers of internal reasons teachers hesitate to implement and engage with new technology. However, the focus of this organizational improvement plan is to examine and address second-order barriers and their impact on effective use of EdTech; thus, for the purposes of this plan, it will be assumed that first-order barriers have been largely overcome.

Change Drivers

Fullan (2011) stated that effective change drivers result in changes to the culture of a school and have a whole-system impact; specifically, he indicates that the right drivers build capacity in teachers and students, foster teamwork, encourage continuous learning, and impact the whole school. The primary change driver for pedagogical change at TCS is the teachers' desire to serve the community through their commitment to teaching. Although some teachers may initially resist change, they understand the impact of technology in general and see its value in many learning activities. The change driver that bridges teachers' reluctance to change and its necessity is the modernized BC curriculum with its focus on student-centred learning as one of its five guiding principles (BC Graduation Program: Policy Guide, 2020) and personalized learning supported by technology (BC's Redesigned Curriculum: An orientation guide, 2015). Although as an independent school, TCS has some freedom to implement curriculum in a way that aligns with its vision, mission, and values, it cannot ignore the clear mandate of teaching 21st century skills through student-centred learning. The Ministry of Education's (MoE) student-centred language and focus on technology are drivers for change that provide the framework and purpose for systemic change.

An unexpected change driver has been the COVID-19 pandemic. The necessity of technology use for all teaching and learning activities was a catalyst for many teachers to engage in EdTech in new and

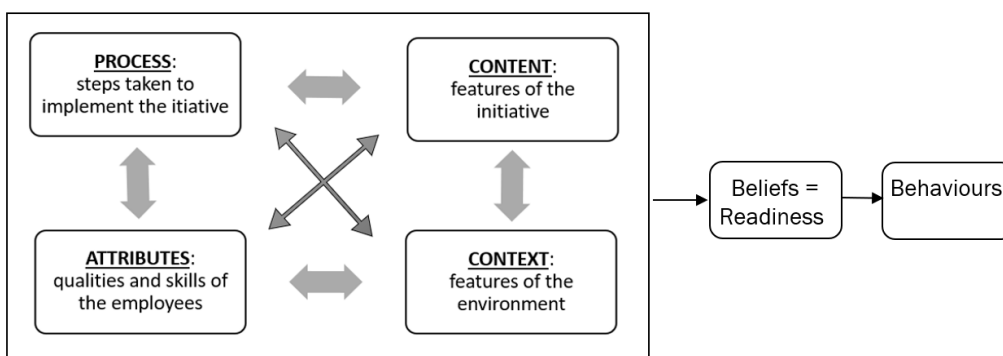
creative ways, and for some teachers, in ways they had previously believed unnecessary or unwise. Thus, in a cataclysmic way, the pandemic has resulted in a greater understanding of the need for change than a lengthy series of discussions could have done. Unfortunately, much of the ground teachers gained was lost in the return to in-person learning, indicating that, though many adjusted to the necessity of technology-driven learning, the experience did not change teachers' beliefs about EdTech and its impact on teaching and learning.

Another change driver is parent expectations. A recent survey of parents indicated that the majority wanted the school to increase technology use, so their children are better prepared for the post-secondary world. This information resulted in increased use of EdTech in the classrooms, including a requirement for students to bring laptops to school. There are change drivers among the faculty, as well. Teachers are, of course, on a continuum of usage, and there are a few teachers who are fully engaged with technology in a manner that could be described as constructivist. These teachers would be a focus for leading the change and are already considered technology leaders among the faculty.

As a leadership-focussed vision for change, there are key considerations that must be kept in mind. First, the teachers as stakeholders are being asked not just to implement a change program but to examine their beliefs about teaching and learning, the success of which will reflect my commitment to transformational servant leadership. Second, my vision for change must align with the school's community-first values by ensuring that the change program positively impacts all stakeholders.

Organizational Change Readiness

Because this Problem of Practice is designed to challenge teachers' beliefs about the transformative capacity of EdTech, it is necessary to assess the teachers' readiness to change. Holt et al. (2007) suggested that change readiness is an attitude that is influenced by four interconnected elements that must be in balance for people to change their beliefs and behaviours, as seen in Figure 4.

Figure 4*Assessing Change Readiness*

Note. From “Readiness for organizational change: The systematic development of a scale,” by D. Holt, A. Armenakis, H. Feild, and S. Harris, 2007, *The Journal of Applied Behavioral Science*, 43(2), p. 235 (<https://doi.org/10.1177/0021886306295295>). Copyright 2007 by NTL Institute.

Readiness to change is reflected in willingness to accept the content, context, and process of the change while respecting the qualities of the members of the organization required to change. For teachers at TCS to be deemed ready, they must understand what the changes in EdTech will be, how they will be implemented, the direct impact on each teacher individually, and how they will use their existing skills and resources to implement changes. According to Holt et al. (2007), when these elements interact in a balanced way, teachers will be ready to examine their beliefs and, consequently, change their behaviours.

Determiners of Change Readiness

Cawsey et al. (2016) stated that an open system is one where events are seen as “interconnected, interdependent components of a complex system” (p. 67). The complexity of the organizational system creates challenges when assessing change readiness, but taking a holistic, open approach that considers past and present behaviours as valid predictors of current readiness to change enables one to comprehend the interconnectedness of the various elements of the organization in the

analysis. The authors identified members' change experiences, organizational adaptability, leaders' openness to change, and members' confidence in leadership as four key determiners for organizational change readiness.

Previous Experiences

Teachers at TCS have had few experiences with internal, school-based change initiatives over the years because, consistent with its conservative values, there is a strong and active belief in TCS that change should be slow and well-considered. However, teachers have experienced changes in the provincial curriculum, which can be used to predict attitudes to change. Teachers at TCS responded to previous curriculum change by making necessary adjustments to content but intentionally avoiding engaging with any philosophical changes that might conflict with the faith-based conservatism of the school. However, the most recent provincial curriculum change has a technology focus that facilitates the shift to student-centred learning (BC's Redesigned Curriculum: An orientation guide, 2015). Although previous experience with curriculum change has revealed a dismissive attitude, teachers see that current curriculum changes reflect the increasing pervasiveness of technology they are experiencing and recognize that its impact on teaching and learning must be addressed. Consequently, teachers are ready for a clear plan to help them engage effectively with EdTech.

Organizational Adaptability

There are many ways in which TCS has adapted well to change. In the mid-2000s, for example, the school had a few years of exponential growth, which was largely because of the school's reputation and identity as a conservative Christian school in contrast to other local Christian schools. The influx of students resulted in more faculty and greater cultural diversity but many challenges to the school's identity. Through the consistency of a longstanding principal and board, the school has held tightly to its culture and values, but the very commitment to conservative values that is the identity of the school makes change problematic. Although the school culture is not particularly change-oriented, if the

change can be presented as incremental and each step intentionally aligned with the school's culture and vision of the future, it will be accepted as a positive change.

Leaders' Openness to Change

Over the past two decades, there have been several mid-level leaders—such as vice-principals or department leaders—who have had plans and visions for change; however, the school's commitment to conserving the ideas and practices of the past has hindered, and at times undermined, change initiatives. Each mid-level leader was open, committed, and involved in preparing teachers for curricular changes through professional development and personal dedication to helping teachers adapt. Hence, there is a history of commitment to preparing teachers for changes that directly impact their teaching and learning practices.

Members' Confidence in Leadership

It is important to identify the organization's leadership and comment specifically on the level of confidence each inspires. The board is an arms-length policy board with a single employee, the principal; thus, the board members do not make decisions regarding the educational programme. However, the board co-chairs are both pastors of the church, and as such, inspire confidence in the faculty and provide spiritual leadership as well as school oversight. The long-serving principal does not engage in the day-to-day operations of the education programme but firmly holds control over activities and changes that he deems may impact the school's culture and has vetoed past change initiatives. Teachers have confidence in the vice-principal to lead effectively, but they also see limitations on the vice-principal's agency to make changes; thus, teachers have confidence that some changes can be made, but not ones that are systemic and far-reaching.

Internal and External Forces Impacting Change

Identifying internal forces impacting the effective use of EdTech in teaching and learning requires questioning what elements in the school are impeding or facilitating teachers' ability or

willingness to change. First, the greatest internal impediment to changing how EdTech is used is the belief that there is no real need for change in the educational program. TCS has grown considerably over the past fifteen years, more than doubling in size; its graduates attend top universities, and it has moved up appreciably in the published school rankings. This data strongly supports the claim that the academic program is successful, and the teachers have good reason to be proud of their accomplishments. It is exactly this success, though, that can become an almost insurmountable barrier to qualitative change because, as stated by Cawsey et al. (2016) “past patterns of success can lead to active inertia” (p. 106); hence, in many ways, mindsets and practices have become fixed in the moment of greatest success, making it difficult to create an understanding of the need for change. Furthermore, teachers perceive a causal connection between their traditional teacher-directed, behaviourist approach to teaching and learning and the success the school has achieved. Though much of the school’s ongoing growth is because of its identity as a conservative school, continued success reinforces the notion that replicating the traditional model will result in the same trajectory of success. These attitudes make this barrier very difficult to overcome.

Second, there are also internal forces that motivate and facilitate positive changes in attitudes towards EdTech. Some teachers are already leading the way in adopting a social constructivist approach to EdTech in their pedagogy and practice, as evidenced by learning activities in their classrooms. These teachers provide informal training and support to their colleagues as needed and continue to seek professional development to discover new ideas, proving that they are already leaders within the faculty. Their excitement in discovering new ways to engage students is very effective for demonstrating new ideas to reluctant staff and moving them continually forward.

Third, the most significant external force impacting this change has been the COVID-19 pandemic. Before the first quarantine, there was resistance from some teachers who did not see the need to integrate technology into their teaching and learning; however, with at-home learning, teachers

were required to engage with technology in a new way to support learning that was completely different from the classroom experience. The teachers who struggled during that time were those who attempted to recreate the classroom experience online rather than using the EdTech resources to teach and learn differently. This experience highlighted teacher beliefs about technology in a way that no survey or classroom observation ever could have done.

Last, it must be said, however, that organizational change cannot happen without trust (Judge & Douglas, 2009). This statement underscores the importance of a servant leader who gains trust by working to ensure that teachers feel that the change process is intentional and there is care for their well-being (Randall & Coakley, 2007; Northouse, 2019). Although teachers' readiness to make changes can be assessed by the instruments described above, their willingness to make changes will be largely dependent on whether they are inspired by my vision for change and trust that I will lead them effectively through it.

Conclusion

This chapter introduced the Problem of Practice that forms the basis for an Organizational Improvement Plan. It identified that there is a gap between the use and integration of education technology that reflects teachers' beliefs about teaching and learning; that is, whereas all teachers use technology to enhance their teaching practice, there are few teachers who engage with EdTech in a way that transforms their teaching pedagogy. Social constructivism is the theoretical framework that will guide the research and inquiry because it houses within it the notion of a vision of a community of learners that aligns with the biblical ideal of living together in unity. Most importantly, the chapter began with a description of Traditional Christian School, its history, pedagogical and philosophical underpinnings, vision, mission, and values, all of which define its unique culture and impact the readiness of the organization and its individual members for change.

Chapter Two: Planning and Development

Chapter Two begins the work of planning for change. In this chapter, the Problem of Practice—empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning—will be framed within a specific leadership approach and an organizational change model that will provide structure for planning and implementing a change strategy in Chapter Three. The planning and development process begins appropriately with a discussion of the leadership approaches that framed the Problem of Practice in Chapter One, which will propel the Organizational Improvement Plan (OIP) forward. Next, how to change will be addressed by considering and comparing several change theories, ultimately defining the framework for leading the change process that is most fitting to this OIP. The third component of this chapter addresses what to change through a critical organizational analysis, examining the past and current states and identifying a more desirable future of the integration of EdTech into teaching and learning at Traditional Christian School (TCS). The fourth section proposes and analyzes possible solutions to address the Problem of Practice, including maintaining the status quo and deciding on a change plan that considers the culture and mission of the school and the resources available and needed to implement the plan. Finally, the chapter ends with a description of and commitment to ethical leadership.

Leadership Approaches to Change

Heifetz (1994) suggested that leadership is best defined as an activity designed to mobilize people to adapt to difficult situations. Throughout the implementation of this OIP, teachers will be mobilized to examine their own beliefs not only about the role of EdTech in their teaching practices but also about their role as teachers in a technology-rich, student-centred environment. Viewed through a social constructivist lens, this leadership approach focusses on the teachers as learners and the leader as mentor and guide (Dagar & Yadav, 2016); the leader will intentionally create a community of learners in which teachers will cooperatively construct their knowledge (Green & Gredler, 2002). How the leader

mobilizes and empowers people has a significant impact on their ability to make necessary changes and thrive, and it requires an intentional and thoughtful approach to leadership that both meets the needs of the teachers engaged in the change plan and aligns with the values and culture of the organization. Leading this change requires a combination of transformational leadership to inspire teachers to see a vision of a different future and servant leadership to support teachers as they are challenged to personal growth.

Transformational Leadership

Research supports the notion that teachers want a transformational leader who is visionary and motivational, who creates a positive school climate that nurtures creativity, and who provides teachers with a sense of purpose (Hauserman & Stick, 2013; Barnett & McCormick, 2004; Gumusluoglu & Ilsev, 2009; Leithwood et al., 2004). These traits will provide the catalyst for teachers to make changes to their practice. Transformational leadership is generally divided into four components: charismatic influence, inspirational motivation, intellectual stimulation, and individualized consideration (Northouse, 2019; Gumusluoglu & Ilsev, 2009). The transformational leader uses personal charisma to inspire loyalty and create a sense of common purpose (Gumusluoglu & Ilsev, 2009); and although charisma is sometimes treated with suspicion because some leaders have used it to manipulate others, the charisma of a transformational leader serves as a role model who communicates confident leadership, a strong ideology, and high expectations to the followers (Northouse, 2019). The transformational leader inspires followers to see an exciting vision of the future, shows them how to achieve goals, and expresses the belief that they can achieve their goals (Gumusluoglu & Ilsev, 2009). The transformational leader's intellectual stimulation of followers results in increased creativity, out-of-the-box thinking, and solving old problems in new ways (Çekmecelioğlu & Özbağ, 2016). Finally, and most importantly for this OIP, the transformational leader shows individualized consideration for followers by creating a supportive environment where people are listened to and feel valued for their contributions, resulting in a trusting

relationship where leaders coach followers to self-actualization (Avolio & Bass, 1995; Gumusluoglu & Ilsev, 2009; Northouse, 2019).

In leading this change, my approach will be to cast a vision for the future of EdTech integration that will challenge teachers to examine their current beliefs, not just their practices, and through idealized influence, intellectual stimulation, and individualized consideration, I will strive to help teachers see the need for change and to believe that they can thrive throughout the challenges of the change program. As a leader in a small school, I have the opportunity to uniquely direct influence on teachers as I model the type of attitudes, beliefs, and actions needed to implement successful changes (Leithwood et al., 2004).

Servant Leadership

Servant leadership is defined by the principle of putting others first (Davis, 2017; Covey, 2006; van Dierendonck, 2010). According to Insley et al. (2016), this principle forms the foundational moral value, superseding organizational needs if there is a conflict between people and organization. In this OIP, this others-first stance will lay the groundwork for organizational change because teachers will feel supported as they are challenged to examine their beliefs about teaching and learning. The role of the servant leader is to show esteem and respect sincerely throughout the change process, giving autonomy and choice where possible to underscore teachers' value as professionals, hopefully resulting in teachers' greater commitment to the school and the profession (Ebener & O'Connell, 2010). Servant leadership has been criticized as a non-leader approach because of its emphasis on the needs of the individual rather than the organization (Davis, 2017) and the ineffective use of persuasion rather than decisive directives (Cerit, 2009). However, Ebener and O'Connell (2010) suggested that the virtue of humility and commitment to service creates a leader who makes decisions based on the greater good for all stakeholders not just the organization.

Covey (2006) described the servant leader as having four specific roles: modelling a life of integrity, diligence, and humility by being anchored to high moral principles; involving stakeholders in the process of pathfinding and vision-casting, so they feel purposeful and committed to the organization's mission; aligning structures and systems of the organization to ensure the stated values align with people's experiences; and, empowering people to "do their own best thing and accomplish that worthy purpose, that vision" (Covey, 2006, p. 105). At Traditional Christian School, servant leadership is highly valued because it echoes the way Jesus led with its emphasis on personal qualities such as love and humility, but it is exactly these qualities that garner teachers' trust in leadership during change (Agosto, 2005; Davis, 2017).

Transformational Servant Leadership

Transformational servant leadership blends the idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration of transformational leadership with the community-focussed, others-first humility of servant leadership. This blended leadership approach seen in Figure 5 is most appropriate to the successful implementation of this OIP because it reflects both the school's and my own common value of service, and it emphasizes what I contribute to the school as a leader by my charisma, ability to inspire vision, and intellectual stimulation. The Problem of Practice identified in this OIP—empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning—will require a strong and inspirational vision combined with sufficient intellectual substance to create a need for change, supported by a humble desire to serve the school community and the teachers who will make the changes. This unique leadership approach is necessary for this OIP because teachers are being asked to question deeply-held beliefs, requiring a leader who cares enough about their growth to push them into emotionally uncomfortable territory.

Figure 5*Transformational Servant Leadership*

Transformational and servant leadership may seem on the surface as contradictory approaches; however, both focus on supportive, authentic relationships between teachers and principals that lead to personal growth. van Dierendonck (2011) and Insley et al. (2016) suggested that the only real difference between them is that servant leaders serve people first, with the assumption that the organization will benefit accordingly (Covey, 2006), and transformational leaders develop people to become good “organizational citizens” (Ebener & O’Connell, 2010, p. 316). The perceived paradox also arises from transformational leadership’s emphasis on personal charisma, or idealized influence, which suggests ambition and pursuit of personal power; however, Hopton et al. (2013) suggested that transformational leadership with humility focusses on the good of the organization, including its people, rather than transformational leadership for self-aggrandizement.

Transformational leadership propels the change of this OIP forward by creating a vision for change (van Dierendonck, 2010; Northouse, 2019), and servant leadership invests in the long-term commitment needed to help teachers navigate the hoped-for outcome of personal growth (Davis, 2017; Ebener & O’Connell, 2010; Covey, 2006). Transformational servant leadership focusses on doing what is

best for the organization while caring for both individuals and the school community, reflecting the Christ-centred values of TCS.

Framework for Leading the Change Process

Thus far, the focus has been on what to change, namely the pedagogical purpose of EdTech at TCS. It is necessary, as well, to define a framework that will guide the organization through systemic and systematic change. Change models provide structure and direction. They frequently begin with creating urgency for change, as in Kotter's Eight-Stage Process, a need for clarification, as in Gentile's Giving Voice to Values, or an acknowledgment of stagnation, as in Duck's Five-Stage Change Curve. This initial stage generally identifies the need to unfreeze, as in Lewin's Three-Stage Model, or awaken, as in the Change Path Model (Cawsey et al., 2016). Although there are fundamental similarities among the above change models, it is vital to the success of the OIP to use one that fits the organization, the change plan, and the change agent.

To begin with, note that Cawsey et al.'s Change Path Model (Cawsey et al., 2016), Kotter's Eight-Stage Process (Kotter, 1995), and Lewin's Three-Stage Model (Schein, 1996) are all appropriate frameworks for this OIP. Cawsey et al. (2016) used the Change Path Model to describe a process of Awakening, Mobilization, Acceleration, and Institutionalization through which the change leader determines the need for change, identifies the gap between the current and desired future states, develops and implements a change plan and cements the new systems to create stability in the organization. In contrast, Kotter's Eight-Stage Process puts greater emphasis on the people in the change process by creating a guiding coalition and empowering employees; furthermore, it identifies the process of visioning, communicating the vision to inspire employees to change, and generating short-term wins as key elements to ensure the people are aligning with the changes. As with Cawsey et al. (2016), the final stage recognizes the need for stability, but Kotter anchors the changes in culture and

values, again focussing attention on the people of the organization as the key experiencers of change (Kotter, 1995).

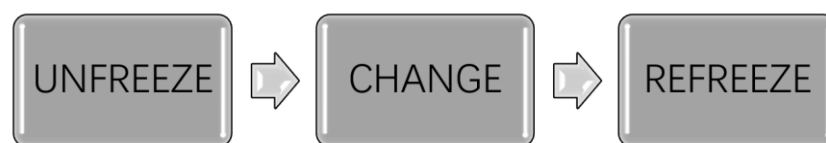
To determine the most effective model for this OIP, it must be understood that the Problem of Practice—empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning—focusses on teachers who will be asked to change their beliefs about teaching and learning. Thus, the Change Path Model, with its focus on the organization is not a good fit as a change model, nor is Kotter’s Eight-Stage Process because, although it is more people-centred, its step-by-step approach is too prescriptive for this change program.

Lewin’s Three-Stage Model

Lewin’s Three-Stage Model of Unfreeze→Change→Refreeze will be used as the best fit for this change program because, as Schein (1996) indicated, it focusses on learning, namely what people must unlearn and relearn to make lasting change. The seeming simplicity is one of the greatest criticisms of this approach, possibly, as Swanson and Creed (2014) suggested because it seems to contradict the complexity of organizational change. However, its three stages echo the familiar beginning-middle-end pattern and, consequently, provide a sense of structure and finiteness to the change program so teachers understand that the defined change program will not last forever. Transformational servant leadership, with its priority on individualized consideration, becomes the crucial component to managing complex change within a simple change model that focusses on the uncomfortable process of unlearning and relearning.

Figure 6

Lewin’s Three-Stage Change Model



Note. From *Organizational Culture and Leadership* (4th ed., p. 300), by E. H. Schein, 2010, Jossey-Bass. Copyright 2010 by John Wiley & Sons, Inc.

As seen in Figure 6, Lewin's model begins by recognizing that people need to have a reason to abandon the status quo. People unfreeze from previous ideas when they experience disconfirmation or information that disconfirms preconceived notions about the organization (Schein, 1996). In this case, the disconfirmation for TCS teachers is the notion that continuing to approach EdTech as supporting teacher-directed practices is becoming increasingly ineffective (Fullan, 2013). Kritsonis (2004) noted that unfreezing happens in the tension between the forces that drive change, such as 21st century learning, and the restraining forces that hinder change, such as fear of real or perceived incompetence, loss of identity, power or position or group membership (Schein, 2010). Consequently, this stage is where, as a transformational servant leader, I need to create the driver for change through leadership that is charismatic, inspirational, intellectual, and relational, while overcoming resistance by gaining trust through humility and personal concern.

A powerfully relevant component of Lewin's change model is its acknowledgement that emotional distress is a significant component of unfreezing (Schein, 1996, 2010). As a leader recognizing the possibility for distress, it is important to create a place of psychological safety in which to address the anxieties produced by disconfirmation (Heifetz & Laurie, 2001; Randall & Coakley, 2007; Schein, 1996). The safe space must involve social interaction, not just personal introspection, because the unfreezing process must impact group norms for it to be successful (Schein, 2010). Nickelsen (2017) indicated that group norms are most effectively changed when the members discuss and reach their own conclusions about change, rather than having them imposed by an external force. Thus, social constructivism becomes a key aspect of the change process as members construct new group norms in the unfreezing stage to enable them to move forward. Psychological and emotional safety is created by a leader who cares deeply for the emotional state of the followers, namely a servant leader whose

desire to nurture, affirm, and persuade will enable teachers to successfully face and overcome their fears about the change process (Davis, 2017). Once the fears have been overcome, the change process can begin.

Schein (1996, 2010) referred to the change stage as cognitive restructuring, stating that there must be an intense cognitive engagement in the process of learning new ideas or behaviours for change to be permanent. Having been encouraged through the process of unfreezing, the work of cognitive restructuring requires transformational leadership that is visionary, charismatic, and inspiring (Gumusluoglu & Ilsev, 2009) to enable teachers to restructure their understanding of the purpose of EdTech and its connection to student-centred learning. For most teachers, even those adept or expert in technology use, the disconfirmation is that EdTech can be pedagogically transformative, not just practically efficient, or even creatively engaging. The transformational leader must leverage the state of pedagogical discomfort and use the one-on-one relationships of individualized consideration to develop teachers' creativity in integrating EdTech and agency in developing a personal pedagogy that enables real and lasting change. In this OIP, the cognitive restructuring in the change stage will involve learning and using EdTech with a different purpose, namely as a tool for deeper learning rather than expediency or student engagement (Carver, 2016). This stage will take time because teachers will change at different rates and will manage their change processes differently; however, taking sufficient time is crucial to internalizing the change process that lays the foundation for the refreezing stage (Schein, 2010).

The final, refreezing, stage stabilizes the changes by reinforcing new norms and habits (Cawsey et al., 2016). Refreezing results from the teachers reaching identified goals, then establishing new goals, patterns, and methodologies, resulting in a change in culture based on shared change experiences (Schein, 2010). The anticipated new norms include increased collaboration among teachers, increased creativity in using a variety of EdTech for various purposes, and increased risk-taking in learning and

integrating new EdTech. Hussain et al. (2018) highlighted the need for employee involvement in the change stage for the institutionalization, or refreezing, to be successful, and Schein (1996, 2010) suggested that employees who are involved in finding solutions are more successful at refreezing because they have ensured personal congruence with the changes.

Lewin's Three-Stage Model has been chosen to guide this OIP because of its simplicity; however, critics, such as Lewis (2019), argued that the oversimplified change model implies that all stakeholders begin the change process at the same place and move through the change at the same pace. Schein (2010), however, viewed the three stages not as an oversimplification but as broadly defined stages that allow change leaders the flexibility to determine how unfreezing, change, and refreezing will happen. Another criticism is that the language of freeze and refreeze implies potential rigidity and fixed mindset, suggesting a lack of the flexibility needed to engage in complex change (Cawsey et al., 2016). Although a valid point and note for caution, a model exists as a framework for the change process, but the leader is the guide. Hussain et al. (2018) acknowledged that transformational leadership is key to inspiring a vision for change and overcoming resistance through the transparency and trustworthiness of the change leader. Consequently, beyond the stabilization of an integrative approach to EdTech, the deep hope is that teachers will understand its power to transform teaching and learning.

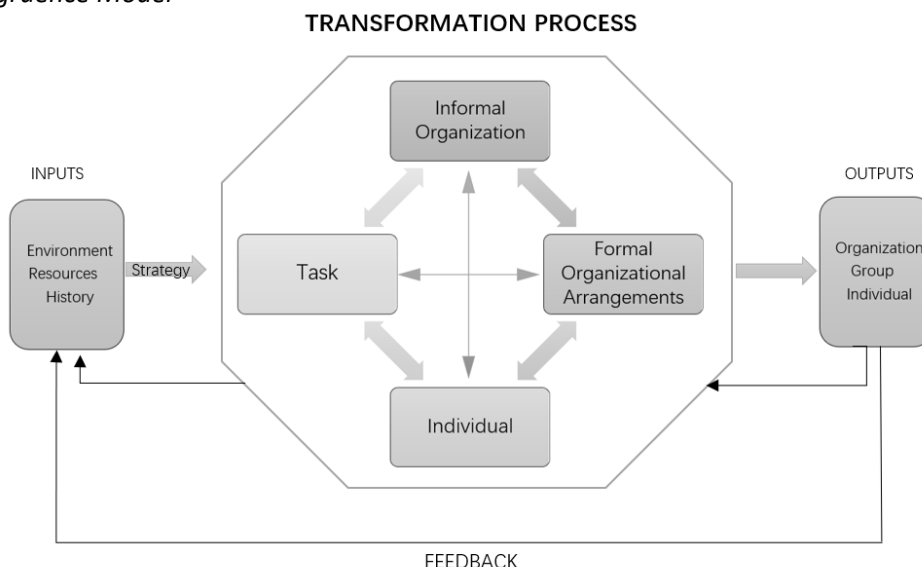
Critical Organizational Analysis

Critical organizational analysis is an essential part of the change process because the change agent must examine the key elements of the organization to define the gap between the current state and the more desirable future state. Nadler and Tushman's Congruence Model was chosen for this analysis because it emphasizes best fit or balance among the various parts. The challenge faced in the organizational analysis is that this Problem of Practice—empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred

learning—is about intangible beliefs rather than identifiable systems. Hence, the analysis will focus on the elements that have impacted current beliefs and how they can be reframed to facilitate change.

Organizational Analysis using Nadler & Tushman's Congruence Model

Nadler and Tushman's (1980) Congruence Model for organizational change considers four elements of an organization: what is done, who does it, how its done, and who makes the decisions. The authors suggested that the more congruence there is among the four components, the more successful the organization will be; however, the goal is not to have perfect alignment, but rather to achieve the best fit, recognizing that the elements are dynamic, not static (Nadler & Tushman, 1980). In applying the Congruence Model to the PoP, the components could be defined as follows: the task is the implementation of technology, the people are the teachers, the formal organization is the artefacts and practices that indicate teachers' pedagogy, and the informal organization is the basic underlying assumptions that can be inferred by observing teacher behaviour and teaching practice (Schein, 2010). Nadler and Tushman (1980) suggested that to make changes in an organization, the change leader must change one element at a time, then realign the others to create the best fit. For example, one needed change is for teachers to reflect on how and why they use EdTech. Once a system of reflection is implemented, other elements, such as the informal organization, will realign to create a new best fit.

Figure 7*The Congruence Model*

Note. From “A model for diagnosing organizational behaviour,” by D. A. Nadler, and M. L. Tushman, 1980, *Organizational Dynamics*, 9(2), p. 47 ([https://doi.org/10.1016/0090-2616\(80\)90039-X](https://doi.org/10.1016/0090-2616(80)90039-X)). Copyright 1980 by AMACOM, a division of American Management Associations.

Input

The Congruence Model recognizes that the success of change initiatives is dependent on what Nadler and Tushman (1980) referred to as inputs (see Figure 7) and “the interplay of these inputs will determine how the people within them will behave, including their affinity for or aversion to change” (Boone, 2015, p. 279). The interplay reflects an open systems approach that recognizes that the complexity of organizations and the dynamic way they interact with their environments (Cawsey et al., 2016).

The school’s *history* is inextricable from the present state. It continues to have a significant impact on current practice and pedagogy because many staff members were part of the first decade of the school as either teachers or students, and the influence of Accelerated Christian Education (ACE) can still be found in current ways of thinking (Walford, 2002; Laats, 2010). Changes to curriculum have been

made as required by the Ministry of Education, but historically the school has acquiesced to changing what is taught, the content, while largely ignoring new philosophies that underpin current best practices. The school's history impacts this PoP because its commitment to traditional methodology—a phrase undefined by the school—has created a gap between the current use of EdTech to support teacher-directed learning and a future state where integration of EdTech supports student-centred pedagogy.

The school's *culture* impacts the use of EdTech because of the siloed nature of the teaching *environment*. Teaching spaces are spread out over the campus from portables to a sprawling main building, making it difficult to collaborate, as does the school's small size which means there are few teachers in each subject area. Furthermore, the inconsistent accountability to changing requirements has resulted in a variance in adopting best practices and educational standards. Teachers have created a culture of supportive individualism that can be seen in various EdTech practices and implementation, but they have largely been allowed to individually determine what changes, if any, to adopt.

The schools' *resources*, both financial and human, tend to be stretched to the limit. One of the schools' values is to provide financially accessible Christian schooling, resulting in a relatively small budget for the size of the school and limited money for resources and change initiatives. Thus, there is a strict budget approval process, and change initiatives must benefit many stakeholders. The school takes great pride in being a grassroots organization that serves the needs of a wide variety of families; hence, a school-wide technology program needs to be implemented purposefully in alignment with the schools' values. There are minimal resources for professional development and purchasing EdTech, but determined teachers have found ways to move forward. However, for some, this has been an excuse to avoid the pedagogical challenges that accompany EdTech implementation.

These elements—history, culture, environment, and resources—collectively reflect the school's conservative values (Claassen, 2011). Although there is ample evidence of teachers using EdTech for

diverse learning purposes, strong traditionalism can be seen in the teacher-directed, stand-and-deliver methodology in every classroom. This traditionalism underpins the Problem of Practice, which is about enabling teachers to bridge the gap between using technology for expedience and integrating technology into learning.

The Transformation Process

The Congruence Model identifies the work/tasks, people, informal organization, and formal organization as the key elements of the transformation process (Nadler & Tushman, 1980; Cawsey et al., 2016). Nadler and Tushman (1980) indicated that the work and the people are interconnected through the skills and knowledge required for the work and possessed by the individuals. In this case, the task for analysis is EdTech use at TCS. All teachers are required to use a learning management system (LMS) for recording marks and reporting and to support learning activities by posting resources and communicating with students; the level of engagement and skill with the LMS varies among teachers. Technologies used are generally freemium platforms or inexpensive software, and teachers are not well-trained in their use; as well, there is little tech support, so teachers need to trouble-shoot independently, which discourages many from innovation. As previously stated, teachers at TCS have had the autonomy to decide for themselves what, how, and when to integrate EdTech, or not at all, and classrooms have been outfitted by request, not based on an overarching plan. Most teachers are keen to learn new technologies that will increase student engagement; consequently, EdTech professional development opportunities are sought after and teachers proficient and innovative in technology use support and instruct others. A more desirable future state would include a clear plan to ensure there are no outliers among the teachers concerning their skills, professional development, and access to EdTech.

The *informal organization*, which Cawsey et al. (2016) refer to as “the culture”, is very strong at TCS. The staff is supportive and collegial and express care and concern for each other both professionally and personally. Teachers have a history of solving problems together and have learned to

rely on each other, mobilizing knowledge throughout the faculty as various teachers learn new technologies. The school's culture of autonomy, though, impedes implementation of change because, although teachers are both compliant and aligned, this OIP requires changes in beliefs in the context of professional collaboration.

The school's *formal organization*, represented by the organizational chart and the decision-making flow (Cawsey et al., 2016), is fairly conventional, with the vice-principal in charge of the academic program and the principal overseeing the school system. However, because of the organic nature of the school, that is, the fact that stakeholders have various roles and influences, decisions are often made outside the organizational chart. For example, a teacher who is interested in technology may also be a parent, an alumnus, and have a spouse on the board; thus, the teacher, using influence in many forums, gets permission, though not formal approval, to implement a program that enhances their own pedagogy, but is unconnected to, or even misaligned with, the overarching education program. Consequently, though there is a formal organization, it does not always impact how decisions are made "on the ground". Also, decisions about technology have often been made without including teachers; thus, it will be incumbent on the change leader to build trust through communication and collaboration (Randall & Coakley, 2007; Hauserman & Stick, 2013; Nadler & Tushman, 1980). A more desirable future state is one where teachers are consulted, and decisions are made according to a strategic plan.

Output

In the Congruence Model, indicators of success are evident in the outputs from the broadest level of organization or system to the unit or group, then to the individual (Nadler & Tushman, 1980; Cawsey et al., 2016). The output needs to be visible and measurable; thus, the analysis focusses on what is currently visible (Cawsey et al., 2016).

From a systemic standpoint, what is most visible is traditional, teacher-directed schooling where students sit at desks, in rows, facing the teacher, an image that is considered a visual confirmation that

we are engaged in serious school, and we know that it is school because this is how school has “always” looked. There is a visceral understanding that we can see both teaching and learning because classroom activities fit within conventional notions of what school should look like. Thus, although this Problem of Practice is about implementing technology use, more fundamentally, it is about changing what is seen as education. A more desirable image would be one where teachers confidently use a variety of EdTech to support student inquiry and higher-order problem-solving. In this scenario, teachers would be conversant in technologies at each level of the SAMR model, choosing supporting EdTech appropriately to the teaching and learning activities, and teachers would share the responsibility for determining learning outcomes, framing them within social constructivism, and becoming teachers of competencies by using EdTech as a tool for discovery and agency. The vision being cast in this OIP involves a shift from teacher-directed to student-centred teaching and learning, where students have the agency to construct their own knowledge through the use of EdTech (Ertmer & Ottenbreit-Leftwich, 2010; Bada, 2015; Dagar & Yadav, 2016).

Strategy

The strategy for creating congruence is to focus on student learning rather than notions of conservative or traditional schooling. Technology is used throughout the school, so there is already an understanding of the value and purpose of EdTech. However, this OIP is about using EdTech as a vehicle for constructing learning in a social environment; thus, the strategy is to help teachers construct new beliefs about EdTech as a facilitator of higher-order thinking so they can, in turn, enable students to construct their own learning. Teachers will need to relinquish their traditional place at the front of the room, both literally and figuratively, so students can become teachers, mobilizing their knowledge as part of a social constructivist approach to teaching and learning (Dagar & Yadav, 2016; Bada, 2015; Green & Gredler, 2002). Focussing on student learning will help teachers consciously or unconsciously shift their mindsets to seeing EdTech as an integrated learning tool to enable students to construct

“deep and connected knowledge” (Ertmer & Ottenbreit-Leftwich, 2010, p. 257) with real-life applications.

Needed Changes

This OIP aims to empower teachers to integrate EdTech more effectively to support teaching 21st century skills, specifically focussing on student-centred learning. Viewed through a social constructivist lens, changes are needed in the locus of the learning; that is, learning activities need to include more elements that give students agency over their learning. Teachers need to change the task of teaching from instructing and guiding learning to developing learning activities that encourage student inquiry and social construction of knowledge. To achieve Nadler and Tushman’s (1980) notion of congruence during the change process, these changes need to be implemented slowly so the organization can realign after each change.

Possible Solutions to Address the Problem of Practice

The Problem of Practice being addressed is empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning because EdTech is currently used primarily to support the prevailing pedagogical culture of teacher-directed teaching and learning. However, Ertmer and Ottenbreit-Leftwich (2010) suggested that “using technology simply to support lecture-based instruction falls far short of recommended best practice” (p. 257). Twenty-first century learning focusses on problem-solving, communication skills, and the ability to work with and learn from others (Lawlor et al., 2018; Fullan, 2013), and technology can facilitate higher-order thinking and connect knowledge to real-life situations (Ertmer & Ottenbreit-Leftwich, 2010). Consequently, maintaining the status quo at TCS is a non-solution to integrating EdTech in a meaningful way.

Leadership Focus: Intellectual Stimulation

Intellectual stimulation, as one of the four characteristics of transformational leadership, is defined as solving problems creatively by approaching situations in new ways (Çekmecelioğlu & Özbağ, 2016; Gumusluoglu & Ilsev, 2009), challenging the status quo (Hauserman & Stick, 2013), questioning beliefs and values (Onorato, 2013), and encouraging others to think independently (Slavich & Zimbardo, 2012). As the change leader, I am proposing solutions that challenge the status quo and devising an intellectually stimulating process by providing opportunities for teachers to learn and participate in creative problem-solving. Specifically, as the change leader, I want to stimulate teachers to think about how 21st century skills are evident in their teaching and learning.

Solution 1: Teamwork Makes the Dream Work

The first proposed solution is technology-focussed, project-based learning that creates reciprocal learning between teachers and students (Lawlor et al., 2018). In this case, students are the change drivers because how the students choose to use technology will push the teachers to engage with technology similarly. The Teamwork model has a strong social constructivist framework where students learn collaboratively in small groups or teams, teaching and learning new technologies to each other and the teacher.

What would it look like?

Lawlor et al.'s (2018) Bridge21 project takes a team-based approach to learning designed to teach students to take responsibility for their own learning with the teacher as guide and facilitator. Technology is used intentionally as a learning resource to facilitate “technology-mediated collaboration” (Lawlor et al., 2018, p. 217). Students would work in teams, and the nature of the learning activities would necessitate collaborative EdTech use. In this solution, structuring collaborative activities around authentic technology use would require teachers to be familiar with available and appropriate EdTech to

students to the desired learning goals; however, teachers would not need to be expert in the EdTech being used. In this way, teachers would be co-learners with the students.

How does the approach to EdTech change?

Based on the Bridge21 teamwork model, the teacher's role shifts from expert to co-learner as students drive their technology engagement and choices, creating a vehicle for teachers to change their thinking about technology (Lawlor et al., 2018). The expectation is that if teachers facilitate, rather than direct the programme, students will use EdTech in a way that aligns with their personal use of technology, pushing the technology into the more transformative modification and redefinition stages of the SAMR model (Puentedura, 2006) regardless of how the teacher intended or planned for its use. For this plan to succeed, teachers must understand that technology can facilitate new ways to work (Lindqvist, 2019), and technology must be seen as a tool for learning in different, student-centred ways (Pedersen & Liu, 2003). Although training and professional development are important, Lawlor et al. (2018) suggested that the teachers must approach technology-focussed team-based learning as different from traditional cooperative learning or group work. Thus, in this solution, the teacher's approach to EdTech is expected to change in response to students' technology use, resulting in reciprocal learning as students construct understanding in the context of team-based learning.

Solution 2: Developing Personal TPACK

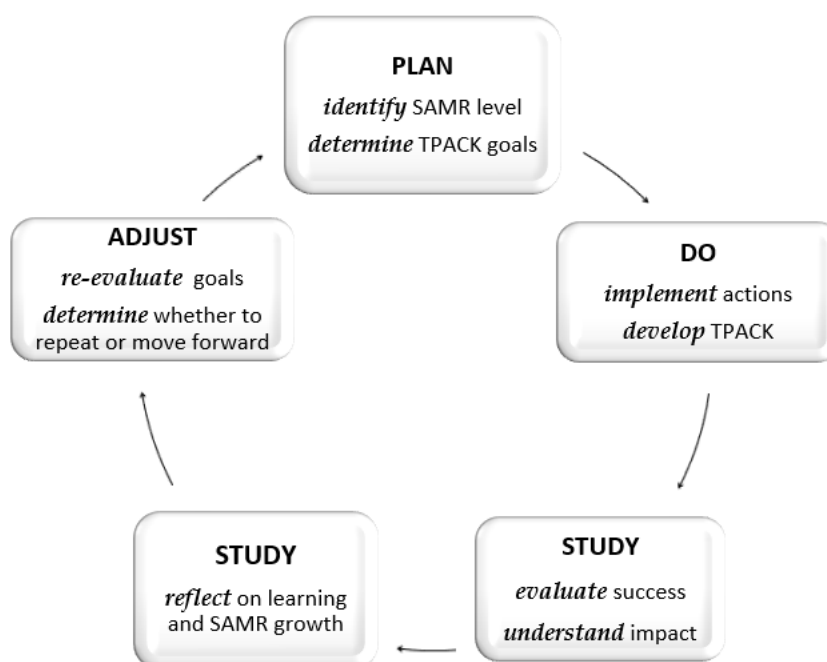
The second proposed solution focusses on teachers constructing their own Technical Pedagogical and Content Knowledge (TPACK). Olofson et al. (2016) argued that TPACK, as a static framework seen in Figure 2, is insufficient to fully encompass the active construction of knowledge teachers must engage in. Consequently, this solution requires teachers to create their own TPACK using a Plan-Do-Study-Act methodology to construct new teaching and learning activities using EdTech that are expected to result in new beliefs around the transformative capacity of EdTech.

What would it look like?

This solution aims to enable teachers to construct their own TPACK through a structured process of trial and reflection which is the PDSA cycle. Ertmer (2005) and Carver (2016) stated that one of the most common barriers to teacher implementation of technology is lack of professional development and training for new technology, arguing that personal experience underpins beliefs, so ensuring teachers experience EdTech through professional development will lead to a change in beliefs and practice. The Plan-Do-Study-Act cycle seen in Figure 8 provides a structure for continuous learning and growth (Pietrzak & Paliszkievicz, 2015; Shakman et al., 2017).

Figure 8

The PDSA Cycle



Note: Adapted from “Policy-driven monitoring and evaluation: Does it support adaptive management of socio-ecological systems?” by K. A. Waylen, K. L. Blackstock, F. J. van Hulst, C. Damian, F. Horváth, R. K. Johnson, R. Kanka, M. Külvik, C. J. A. Macleod, K. Meissner, M. M. Oprina-Pavelescu, J. Pino, E. Primmer, G. Rîșnoveanu, B. Šatalová, J. Silander, J. Špulerová, M. Suškevičs, and J. Van Uytvanck, 2019, *The Science*

of the Total Environment, 662, p. 375 (<https://doi.org/10.1016/j.scitotenv.2018.12.462>). Copyright 2019 by The Authors.

The first stage is to Plan for the implementation of a specific technology, including identifying the aim or purpose of the implementation. Teachers would be encouraged to engage with a technology that is one step further up the SAMR model from what they have used in the past (Hamilton et al., 2016). The Do stage is the actual implementation of the EdTech, and teachers will collect data based on a pre-determined metric used to assess the effectiveness of the implementation. The Study stage requires teachers to analyze the data they collected regarding the efficacy of the technology they were using. This stage would also include a reflection, a key component of TPACKing (Olofson et al., 2016). The final stage requires teachers to Act or Adjust their original plan, identifying next steps that could include deciding whether to continue exploring the same technology or applying the same PDSA cycle to a new technology (Pietrzak & Paliszkiwicz, 2015). Teachers would work in teams for accountability and objectivity when analyzing data, with the intention that the team members would continue to support each other in further informal EdTech implementation.

How does the approach to EdTech change?

The expectation is that the process of choosing, evaluating, and reflecting on various technologies will engender a greater commitment to integrating EdTech in teachers' daily practice (Olofson et al., 2016). Many teachers will try different platforms, software, or hardware during this time, and because this change plan is approached through a social constructivist lens, teachers will reflect on how they construct their own knowledge as they work with their colleagues (Green & Gredler, 2002). In this scenario, teachers' construction of their own knowledge drives change.

Solution 3: Redefining the Role of the Teacher

Fullan (2013) suggested that the teacher's role needs to be redefined as part of what he refers to as "stratosphere," or integrating technology, pedagogy, and change knowledge. Stratosphere

focusses on teachers as change agents, shifting them from traditional learning authority (Pedersen & Liu, 2003) to coaches and co-learners. This redefinition is designed to completely change the nature of school because it changes the teacher-student relationship from a hierarchy to a partnership, creating a team in which teachers, students, and technology are co-partners (Fullan, 2013).

What would it look like?

In the 1930s, Philips Exeter Academy in New Hampshire, USA, developed a pedagogical method called Harkness learning, after a wealthy industrialist who donated a significant sum to fund a radical new learning methodology (Cadwell & Quinn, 2015; Williams, 2014). This student-centred, discussion-based learning takes place around a large seminar table, where both teachers and students sit to discuss ideas as co-contributors to teaching and learning. Technology in Harkness learning has two role: for pre-class preparation, often videos, that provide content and context for classroom discussions and support during teaching and learning discussions wherein students can research in real-time to support an argument or use various platforms to present their contributions.

How does the approach to EdTech change?

In the case of a technology-rich Harkness classroom, the learning itself drives the use of technology, unconstrained by the teacher's technology proficiency. As students use technology to present and enrich their learning engagement during discussions, teachers will be co-learners with students who are engaging with new technology. In that way, teachers become students, and students become teachers through EdTech, what Fullan (2013) called "flipping teacher and student roles" (p. 47). The radical change, in this case is the pedagogy itself, and change in teacher beliefs about technology becomes part of the overall pedagogical change rather than a focus.

Comparing the solutions

As previously stated, the solutions are presented in order of impact of change. The Problem of Practice is that teachers at TCS are not engaging with the transformational aspects of EdTech as a tool

for teaching and learning; consequently, teachers' beliefs about the purpose of EdTech in pedagogy and practice must be challenged. The overall guiding vision is to establish a learning organization that values personal mastery, shared vision, team learning, and system thinking (Pietrzak & Paliszkiewicz, 2015). Maintaining the status quo is, of course, the easiest solution because it requires no extra resources, training, or uncomfortable changes, which is its greatest value; however, this OIP is about making systemic changes, so the status quo will be considered a non-solution.

The Teamwork solution would require the fewest resources and the least disruption; that is, teachers are familiar with group work, collaborative learning, and other forms of interactive, student-based pedagogies, making the Teamwork solution a familiar, but enhanced, solution rather than a transformation. Teachers would build on existing knowledge with training in new EdTech to enhance what they are already doing. However, this use of technology is also a weakness of the Teamwork solution, in that teachers may take a complaisant approach of familiarity and not take the opportunity to engage with technology in a new way. It is also not a given that students' use of EdTech would push teachers to expand their own use; in fact, as Kim et al. (2013) suggested, a teacher who believes strongly in teacher-directed learning is likely to constrain students' exploration and use of EdTech to what they are familiar with. As a solution to the problem of teachers' level of transformational engagement with EdTech, this change is subtle and potentially requires authoritarian leadership to insist teachers use EdTech in new ways. In other words, it would be easier for teachers to maintain an enhanced status quo than to change their beliefs.

In contrast, the TPACKing solution does require teachers to actively engage with EdTech in their pedagogy, and the reflective component and cyclical PDSA process are intended to assist teachers in developing their own TPACK. Unlike the Teamwork solution, TPACKing requires the teachers, rather than the students, to choose new EdTech to research and implement. This solution puts engagement with EdTech at the forefront and purpose of the learning activities, rather than as a component among other

components. This solution would require more training and professional development for teachers to feel sufficiently competent in each technology they plan to implement. As well, where the Teamwork solution would be relatively easy to implement as an extension of existing pedagogy, leading teachers through the TPACKing process based on the PDSA cycle would be time-consuming, and it would be easy to lose momentum as teachers explore technologies one at a time.

Harkness learning is completely different because it requires a full systemic change, from furniture to class sizes, and teachers would need to be trained in Harkness learning beyond how to use technologies to support it. It is a vision for education that must begin at the board level because it requires small class sizes to implement it effectively, in turn, requiring more teachers, higher tuition, more training, etc. Whereas the other two solutions could be implemented within the current budget, Harkness learning would be very expensive. Thus, regardless of its merits, it is impractical, and its innovativeness conflicts with the conservative culture of the school.

Table 1

Comparison of Possible Solutions

Key elements	Solution 1: Teamwork	Solution 2: TPACKing	Solution 3: Harkness
Change from status quo	Minimal, potentially none if the teacher is resistant	Potentially significant because teachers will implement EdTech they invest in	Radical, whole system change
Resources & budget impact	Technical support, minimal budget impact	Technical support, increased pro-d budget for exploring new EdTech	Harkness tables small classes (max. 18 students), technical support
Professional development	Project-based learning, EdTech training	Training for a variety of new technologies (hardware & software)	Full Harkness training, training for a variety of new technologies (hardware & software)
Resultant change in teacher beliefs	Change in teacher beliefs becomes a by-product of collaborative learning	Changes in teacher practices, then beliefs, is the focus of the activities	Radical change in teacher beliefs about the roles of teacher and student

Chosen Solution

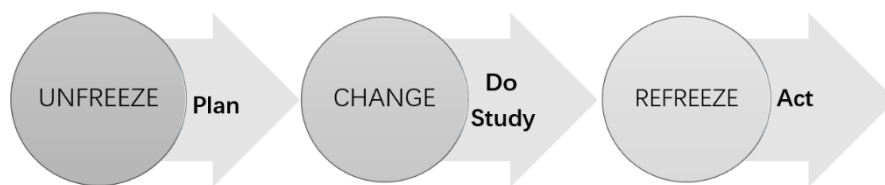
The chosen solution is a blend of Solutions Two and Three, focussing on teacher TPACK development to integrate EdTech that supports student-centred learning. This amalgamation recognizes that change needs to be underpinned by a strong foundation of technology and pedagogy that will impact teachers' practices. However, this OIP is about more than effective integration of EdTech; its purpose is to use TPACK to empower teachers with the confidence and agency that will enable them to shift to student-centred pedagogy that supports 21st century skills. Viewed from a constructivist perspective, teachers will use the conceptual framework of TPACK to construct knowledge that will change their teaching practice.

What would it look like?

Teachers will start by planning for technology use that includes current implementation and exploration of new technologies, using the Plan-Do-Study-Act (PDSA) model as a practical structure that will enable them to make changes thoughtfully and intentionally. The TPACK framework will guide how teachers choose technology based on their own knowledge, the content they are teaching, and their own pedagogical beliefs, and the expectation is that they will strive for a "higher" level of the SAMR model than where they currently are. In practice, teachers' plans will include how technology will be used to support student-centred learning activities, and in the classroom, teachers' activities will include a co-learning element that enables students to explore technologies and teach both classmates and the teacher authentically. Consequently, students will be encouraged to use a variety of EdTech, reflecting their own interests and ways of thinking, and authentically integrate the technologies into their learning and presentation of learning. The PDSA model teachers will use to structure their learning aligns with Lewin's Three-Stage change model as seen in Figure 9. This connection will be explored in greater detail in Chapter 3.

Figure 9

Lewin's Three-Stage Change Model and the PDSA Cycle



Note. Adapted from “Continuous improvement in the public school context: Understanding how educators respond to plan–do–study–act cycles,” by W. Tichnor-Wagner, J. Wachen, M. Cannata, and L. Cohen-Vogel, 2017, *Journal of Educational Change*, 18(4), p. 469 (<https://doi.org/10.1007/s10833-017-9301-4>). Copyright 2017 by Springer Science+Business Media Dordrecht. From *Organizational Culture and Leadership* (4th ed., p. 300), by E. H. Schein, 2010, Jossey-Bass. Copyright 2010 by John Wiley & Sons, Inc.

How does the approach to EdTech change?

As a result of the systematic PDSA approach, teachers will construct their own TPACK and integrate their new knowledge into their teaching and learning activities. Through the process of being learners themselves, teachers will be better able to engage their students in constructing understanding in the community of their classroom. Consequently, learning activities will be less teacher-directed and more student-centred, reflecting teachers’ change in beliefs about the transformative capacity of EdTech.

This chosen solution will require creative, out-of-the-box thinking for many teachers, but the planning and implementation of this change program will allow me, as the change leader, to stimulate teachers intellectually, modelling innovative problem-solving. Leading this change will require a combination of transformational leadership to inspire teachers to a new vision of what technology use

at TCS could look like and servant leadership to encourage them to personal growth through the process.

Leadership Ethics and Organizational Change

Proverbs 22:6 says, “Train up a child in the way he should go; and when he is old, he will not depart from it.” (*The Holy Bible: King James Version*, 1769/1985). This verse provides the moral mandate of TCS, namely, to train the child in the way he *should* go as determined by the school *in loco parentis*. Starratt (1991) contended that schools serve the moral purpose of nurturing growth in children for the sake of society; consequently, schools must be led by moral, ethical, leaders. Furthermore, according to Tuana (2014), ethical leaders must be trustworthy, committed to ethical leadership, and have the moral courage to ensure that their “ethical leadership permeates the entire community” (p. 153), examining the community for shared prejudices, blind spots, and ethical insensitivities. Because TCS is a Christian school, ethics are defined by alignment with the Bible and with Christian traditions, encapsulated in Micah 6:8, which poses the question “And what does the LORD require of you?” with its response, “To act justly and to love mercy and to walk humbly with your God” (*The Holy Bible: New International Version*, 1973/2005).

Ethical leadership is challenging in a variety of ways, especially when implementing change initiatives. It is often during change that a leader’s commitment to ethical leadership becomes evident, as the pressure to give in to unethical behaviours or to compromise principles is heightened during times of change (Sharif & Scandura, 2013). The leader can become insensitive to the ethical issues arising within the change process, and the inability to recognize ethical considerations can undermine the leader’s intentions and actions (Tuana, 2014). For example, servant leadership is appealing when there is time to coax and convince followers to grow and change (Davis, 2017); however, when change is urgent or followers recalcitrant, it would be easy for leaders to become authoritarian and dictatorial. Similarly, a transformational leader may lose sight of individual consideration and rely too heavily on

superficial charisma to make change happen. In both cases, the leader faces the ethical challenge of remaining committed to positive and affirming leadership traits.

The focus of the Problem of Practice on the transformative capacity of EdTech implies that teachers will be challenged to significantly change their beliefs and practices, requiring an intentionally ethical leadership approach that values care for the stakeholders and the community the changes will impact. This OIP raises three specific ethical issues. The first falls within the ethic of community. Social constructivism describes learning that happens in community; however, technology use is often associated with radical constructivism, which is individualistic and potentially anti-community. Thus, the ethical question is, how can it be ensured that EdTech teaching and learning activities focus intentionally on learning in community? The second issue falls within the ethic of care. In the process of change, stakeholders, in this case, the teachers, adapt to change at different rates; some will be excited about the change and push to the forefront, but some teachers will be extremely reticent because of the uncertainty and discomfort it causes. How, then, can the change process be managed to ensure care for teachers' well-being? The third ethical issue considers the duty to respect the school's culture and the risk that change will damage the defining elements of the school. Thus, the ethical question is, how can the school be led through a significant change without changing it to an extent that it is unrecognizable when the change initiative is completed?

Ethic of Community

An ethic of community is evident in leadership that is aware of the values and morals of the community and uses their leadership to serve and strengthen the community (Davis, 2017). As a Christian school, TCS holds community as a foundational principle, modelled on the early church as the first collective of Christian believers as seen in Acts 2 (*The Holy Bible: New International Version*, 1973/2005). This vision is echoed by Furman (2004), who stated that an ethic of community “centres the communal over the individual as the primary locus of moral agency in schools” (p. 215), not that

individuals must be unquestioningly subservient to the organization, but rather that there is a moral responsibility to value the communal work of the school as a vehicle for ethical learning both for and in life (Tuana, 2014). Thus, my role as an ethical leader is to ensure that the constructivist approach to EdTech reflects the value of community at TCS by emphasizing the elements that align.

As a theoretical framework, constructivism can be perceived as undermining the tenets of the ethic of community described above because of the tension between the individualism of radical constructivism and the value of living and learning in community (Zevenbergen, 1996). Olofson et al. (2016) suggested that radical constructivism—constructivism that posits that all knowledge is constructed in the individual mind—is often associated with technology use, and it is this extreme form of constructivism that is antithetical to the ethic of community valued at TCS. Radical constructivism can be countered by the intentional choice of *social* constructivism based on Vygotsky's assertion that knowledge acquisition must happen in the context of the learning community (Dagar & Yadav, 2016), reflecting the school's ethic of community and allowing constructivism as an ethically viable framework. According to Davis (2017), a key characteristic of servant leaders is that they value community-building, and by focussing on socially constructing knowledge and understanding of EdTech, I will be serving the TCS community and aligning with its foundational values.

Ethic of Care

An ethic of care is evident in leadership that is relationship-focussed and seeks to ensure that all voices are heard (Ehrich et al., 2015). This PoP indicates a need for teachers to understand how EdTech can change their teaching practice. In the process, their beliefs about the role of the teacher in a technology-rich, student-centred classroom will also be challenged (Tondeur et al., 2016). In a school characterized by a teacher-directed, behaviourist approach to education, these challenges will cause significant distress in some teachers. Adaptive problems, as defined by Heifetz (1994), require people to approach change as a process rather than an end, and the leader's role is to care for the emotional well-

being and personal growth of those experiencing change. Starratt (1991) posited that an ethic of caring values human dignity and recognizes an obligation to fostering agency and nurturing self-esteem based on mutual regard between teacher and leader. Consequently, as teachers grapple with challenges to their beliefs about teaching and learning, as a servant leader, I will need to demonstrate commitment to the growth and health of the individuals by ensuring that they feel meaningful in their roles and respecting prior knowledge and experience (van Dierendonck, 2010). Ciulla (2005) stated that an ethical leader seeks to enlarge the domains of others by empowering them to grow and change and to strive for technical and moral excellence; thus, organizational change will be intertwined with the personal and professional growth of teachers.

Ethic of Duty

An ethic of duty is evident in leadership that puts service to the school above the desire for change and respect for the history and culture of the school above a change program. Halstead (2014) contended that parents choose specific Christian schools to align with their values, a contention evident at TCS; thus, the history and culture are an intrinsic part of parents' choice to enrol their children. TCS places a high value on its history and genesis, and the notion of separateness that permeates the school's culture reflects the longstanding tradition of Christian education (Walford, 2002; Sneath, 2019); however, this OIP is about embracing 21st century skills and the technology that advances them in a school that approaches change cautiously, creating a tension between forward-looking technology in a backward-looking school (Fullan, 2013; Gutek, 2013). Duty to the students and parents who are stakeholders in the school requires the change leader to ensure 21st century skills are being taught and learned. Duty to the school's history and culture requires the change leader to examine the elements of 21st century skills and to focus teaching and learning on those skills that align with the values and culture of TCS.

Leadership

Ethical leadership is essential to addressing the ethical issues, both anticipated and unanticipated, that will arise throughout the change process. A servant leadership approach will provide the framework for the ethics of community, care and duty as described above because it emphasizes putting others first and values community (Davis, 2017). An ethic of community will be evident in an approach where students and teachers learn together through social constructivist activities. An ethic of care will be evident in the atmosphere of emotional safety that respects teachers' dignity and professionalism. An ethic of duty will be evident in the change program that respects the history and values of the school throughout the change process. As indicated by Agosto (2005) and Davis (2017), these ethics are modelled by Jesus Christ and the Apostle Paul and thus are cornerstones of leadership in a Christian organization.

Conclusion

Chapter Two has addressed the initial planning and development phases of an organizational improvement plan for Traditional Christian School. It has sought to frame the adaptive problem of challenging teacher beliefs about the transformative capacity of education technology within a hybrid leadership model of transformational servant leadership that will enable the leader to both inspire and support teachers through the change process. Schein's (1996, 2010) interpretation of Lewin's Three-Stage Model for organizational change was chosen because of its simplicity, thus flexibility, in focussing on the main elements of change in its freeze, change, refreeze process. Nadler and Tushman's (1980) Congruence Model provided a framework for the change readiness organizational analysis, and it was intentionally chosen because of the focus on the fit of the component parts in an open-systems approach. Next, three solutions to the Problem of Practice were proposed, quickly dismissing the status quo as a non-solution. The chosen solution describes a plan through which teachers will develop their own Technical, Pedagogical, and Content Knowledge (TPACK) that will facilitate a shift in teaching and

learning from teacher-directed to student-centred pedagogy. Finally, a discussion of ethical leadership for ethical communities framed three specific ethical issues that are considered endemic in this OIP and can be addressed by highlighting the ethic of community, ethic of care, and ethic of duty. In Chapter Three, the plan initiated in Chapter Two will be considered in greater depth, moving from proposal to implementation, considering issues of evaluation and communication, among others.

Chapter 3: Implementation, Evaluation, and Communication

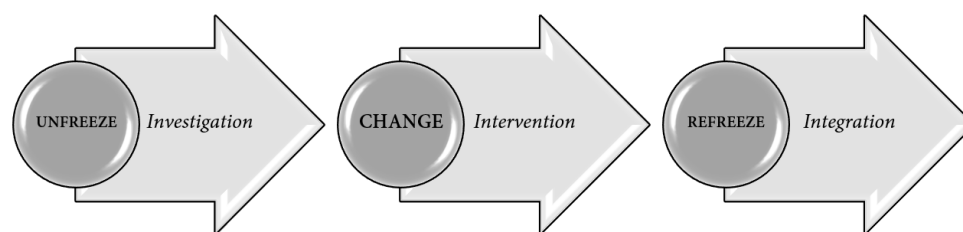
Chapter Three describes the action plan devised to address the Problem of Practice (PoP) of empowering teachers at Traditional Christian School (TCS) to understand the capacity of education technology (EdTech) to shift the focus of their practice from teacher-directed to student-centred learning. The first part of this chapter outlines the change plan introduced at the end of Chapter Two. The plan will engage teachers in building their own Technical, Pedagogical, and Content Knowledge (TPACK) to help them shift their practice from teacher-focussed to student-centred learning and is framed by social constructivism as teachers construct their TPACK individually and in professional learning groups. The second part of the chapter describes how the change program will be monitored and evaluated. Based on frameworks suggested by Markiewicz and Patrick (2016) and Waylen et al. (2019), a plan is developed to monitor for continuous improvement, specifically for learning, and to evaluate the progress of both teachers' growth and the success of the implementation plan. Woven throughout the first and second sections is the Plan-Do-Study-Adjust (PDSA) model, highlighting the cyclical nature of change implementation; that is, at every stage, there should be thoughtful planning, considered action, and critical reflection, which should be cycled continuously and habitually. The third section of this chapter outlines the crucial communication plan, recognizing that change cannot exist without communication, as suggested by Ford and Ford (1995). Finally, this Organizational Improvement Plan (OIP) concludes with a discussion of the next steps and future considerations.

Each component of this chapter has a different leadership focus based on what I believe teachers at TCS will need from the change leader. Furthermore, all stakeholders will be encouraged to reflect deeply on both the change process and their own learning because, as Dewey (1933) has generally been paraphrased to state, learning does not exist without reflection.

Change Implementation Plan

The underpinnings of this change implementation plan are layered and complex because they engage whole-school implementation of education technology, changes to teachers' learning activities, and changes to teachers' beliefs about their role in teaching and learning. The benchmarks for the first two are clear because technology use can be observed in action and planning, but it is very difficult to set benchmarks for changes in teachers' beliefs because, as Kim et al. (2013) indicated, it is difficult to distinguish between teachers' beliefs about technology and their beliefs about teaching in general. It is the assumption of this PoP, however, based on observation and extrapolation, that teachers at TCS do not understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning. Ertmer (2005) suggested that beliefs are most likely to change through the kind of personal experiences that form the basis for this change implementation plan.

One of the key drivers of this change plan is the need to teach students 21st century skills, described by Koh et al. (2017) as including such elements as collaboration, critical thinking for innovation, self-reflection and self-learning, and technology skills to support these elements. Although some social constructivism is evident in learning activities at TCS, such as group work or collaborative projects (Dagar & Yadav, 2016), these activities are still teacher-directed and leave little room for students to construct their own understanding. The shift from teacher-centred to student-centred learning intrinsic in 21st century learning is slow in taking root in the school. Teachers' successful integration of EdTech into their teaching and learning practice is impacted by second-order beliefs about students' learning and knowledge acquisition (Ertmer, 1999; Hsu, 2016, Kim et al., 2013), their willingness to take risks in their teaching and learning practices (Holdsworth & Maynes, 2017; Windschitl, 2002), and their individual readiness to change (Vakola, 2014). This change implementation plan will take place in three stages—investigation, intervention, and integration—that align with Lewin's three-stage change model of unfreeze, change, and refreeze, as illustrated in Figure 10 (Schein, 2010; Cawsey et al., 2016; Cummings et al., 2016; Hussain et al., 2018).

Figure 10*The Change Model*

Note. This figure connects Lewin's Three-Stage change model (Schein, 2010) with the change plan for this organizational improvement plan. From *Organizational Culture and Leadership* (4th ed., p. 300), by E. H. Schein, 2010, Jossey-Bass. Copyright 2010 by John Wiley & Sons, Inc.

Leadership Focus: Individualized Consideration and Inspirational Motivation

The goal of this PoP is to empower teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning. The individualized consideration of a transformational leader is an important focus for me because it describes the leader's ability to know and understand individuals' needs and to coach them to success (Avolio & Bass, 1995; Çekmecelioğlu & Özbağ, 2016). This trait, combined with the servant leader's care for teachers' personal growth (Davis, 2017) creates leadership that focusses on empowering teachers to use their skills, knowledge, and experience to change their practice. One element of empowering teachers will be to identify what Kotter (1995) referred to as a guiding coalition, which is defined as a group of teachers who already integrate EdTech into a student-centred, constructivist approach to teaching and learning. These teachers will work with the change leader to help colleagues through the change process.

The purpose of inspirational motivation is to create a vision for teachers to strive toward. Çekmecelioğlu and Özbağ (2016) suggested that inspirational leaders motivate people to take risks and exceed expectations, Gümüşlüoğlu and İlsev (2009) argued that inspiration results in increased creativity, and Barnett and McCormick (2004) and Hauserman and Stick (2013) asserted that teachers

want to be inspired to be better and to do better. Inspirational motivation, therefore, is intended to create the intrinsic impetus for teachers to buy into the change plan and its opportunities to improve their teaching practice. As the change leader, it is very important to me that teachers are inspired by a vision of a future state in which their teaching practice is transformed because they have allowed their beliefs to be challenged and that they can make the necessary changes because they experience supportive, caring leadership.

Stage One: Investigation – the Unfreezing

Lewin's Three-Stage change model begins with unfreezing (Schein, 1996, 2010; Cawsey et al., 2016). This stage is intended to question the status quo of how and why EdTech is currently used. In this case, the unfreezing will be done by investigating how teachers use technology and what the potential barriers are to using it more effectively. By beginning the change process with investigation, the goal is to focus teachers' attention on their technology use and lay a foundation for implementing change.

What Will Be Done?

First, there will be professional development to help teachers understand Puentedura's (2006) Substitution-Augmentation-Modification-Redefinition (SAMR) model, seen in Figure 1. The SAMR model will be used as a taxonomy for teachers to identify how they currently use EdTech, generally for enhancement or transformation of learning activities, and to set goals to define how and what they plan to change (see Appendix A). Subsequently, using a form like that in Appendix B, teachers will be asked to reflect on how and why they use EdTech to support their teaching, recognizing that the literature supports the importance of reflection in professional growth and effectiveness of technology implementation plans (Koh et al., 2017). I expect that the teachers will quickly identify first-order barriers—external factors outside the teachers' control, such as equipment, support, and training (Ertmer, 1999; Hew & Brush, 2007)—in their reflections because TCS is a small school with limited resources. However, research suggests that teachers encounter both first- and second-order barriers

when considering EdTech (Ertmer, 1999; Hsu, 2016; Fullan, 2013; Carver, 2016; Kim et al., 2013); thus, I also expect that teachers' responses will also include statements that indicate beliefs that influence why they do or do not use EdTech. Finally, a collective and/or individual debrief of the reflection activity will allow me the opportunity to guide teachers to examine second-order barriers they may have and lay a foundation for cognitive restructuring (Schein, 1996, 2010) of how teachers approach EdTech.

Furthermore, because of the debrief, it will be evident which teachers fluently use EdTech at the Modification and Redefinition level of the SAMR model (Puentedura, 2006), and these teachers will become part of what Kotter (1995) called a guiding coalition that will help lead the change, providing in-house professional development by demonstrating their own use of EdTech.

What Will Be the Impact?

At the investigation stage, the impact on teachers is that their attention will be drawn to a specific area of their practice, namely EdTech. Historically, teachers at TCS have developed and implemented their teaching practice with little intervention or challenge to their beliefs; however, this investigation process is intended to be impactful because its purpose is to unfreeze teachers from their current mindsets about how they use EdTech.

What Are the Challenges?

The primary challenge of this stage will be that this is a potentially arduous process. Beginning the change process with an investigation of this sort requires time, and teachers may be resistant to the level of reflection and introspection expected. Additionally, the leading-from-behind servant leadership may not move the plan forward quickly enough, and it may get bogged down in the busyness of school life if it does not have enough impetus behind it. Thus, the leadership response to these challenges is inspirational motivation that continually articulates the vision of using EdTech for better teaching and learning. The guiding coalition will also be used to encourage teachers through collegial leadership.

Stage Two: Intervention – the Change

The goal of Stage Two is to change how and why EdTech is used at TCS. Lewin's change model identifies the second phase as the change stage, or what Schein (2010) refers to as "cognitive restructuring" (p. 308). Teachers will use the information gathered in the investigation stage (Olofson et al., 2016) to move beyond reflecting on their current practice to take an active, constructivist approach to developing their own TPACK (Technology, Pedagogy, and Content Knowledge). The intervention is both individual and collective, designed for teachers to develop their own TPACK and to collectively develop common meanings for technology use that will enable them to grow and learn together (Ivero, 2010).

What Will Be Done?

An intervention is an action by an outside force intended to improve a situation (Barber, 1998). In this case, the intervention will take place in the form of new EdTech experiences. Ertmer (2005) stated that changes in beliefs are most likely to occur through positive experiences; consequently, teachers will engage in professional development and participate in professional learning groups to increase their understanding of TPACK and challenge their beliefs about how technology impacts teaching and learning. The literature indicates that professional development that focusses on both how to use the technology itself and how to integrate it into classroom practices builds teachers' confidence and capacity in using technology (Ertmer & Ottenbreit-Leftwich, 2010; Koh et al., 2017; Edwards-Groves et al., 2019). It will be most valuable to provide relevant and timely professional development so teachers are excited to implement practical tools that meet their needs (Hew & Brush, 2007). Professional development that focusses on the intersection of content knowledge, pedagogy and technology will have the most impact on teaching and learning (Ertmer & Ottenbreit-Leftwich, 2010). Teachers will be encouraged, and eventually required, to participate in a variety of professional development modes, including webinars, courses, and technology training because, as Ertmer and

Ottenbreit-Leftwich (2010) stated, teachers who are confident in their skill with and knowledge of technology are more likely to integrate it effectively into their teaching practice.

Concurrently, teachers will form professional learning groups to explore and develop TPACK, focussing on constructing common meanings and understandings of the elements of TPACK through social constructivism. Professional learning groups will be arranged in several different ways—grade teaching partners, subject specialties, levels of experience, for example—and could be rearranged for different types of knowledge construction. The groups would focus on codesigning, developing, and reflecting on learning experiences, activities which Koh et al. (2017) suggested are crucial to professional development. These codesigned experiences will help shape teachers' TPACK by critically evaluating of their teaching practices and collaboration with peers.

What Will Be the Impact?

The impact of the intervention will be seen in three specific areas: teachers' self-efficacy, teachers' practice, and teachers' beliefs. Ertmer and Ottenbreit-Leftwich (2010) and Hsu (2016) suggest that the self-efficacy that comes with confidence in using technology may be even more important than skills and knowledge, and Olofson et al. (2016) noted that teachers will gain confidence as they take ownership of their TPACKing. Furthermore, Holdsworth and Maynes (2017) suggested that as teachers gain self-efficacy and experience positive outcomes, they will be more willing to take risks and be innovative. Through the personal attention of individualized consideration, I will affirm teachers' increasing skill and growth, empowering them to gain further confidence and try new strategies.

The intervention will also impact teachers' practice. Fullan (2013) stated that teachers who use technology effectively create opportunities for deeper and broader learning; moreover, teachers can enable students to become more innovative and improve higher-order thinking skills by taking a constructivist approach to using technology (Fullan, 2013; Lewis et al., 2019; Brown, 2019). Fullan (2013) stated that "if we get the pedagogy right and incorporate technology accordingly, learning will become

easier, deeper, and more engaging” (p. 21). As teachers’ self-efficacy increases and their changed practices result in greater student engagement, their beliefs about the transformative nature of EdTech will also be impacted because they will have experienced success and seen the positive impact on student learning.

What Are the Challenges?

The challenges of the intervention stage can be summed up in the question, why change? Teachers have worked hard to be successful, developing pedagogy that integrates technology at a level they are comfortable with. Reflecting Ertmer’s (2005) assessment, most teachers at TCS want to use technology more effectively and frequently ask for first-order issues to be addressed, but the notion that integration of EdTech could change what they believe about teaching and learning will be incomprehensible to many. Ertmer (1999) stated early research about barriers to teachers’ implementation of EdTech assumed that if the first-order barriers could be overcome—i.e. money was found for equipment and training—teachers would naturally and easily integrate technology into their classroom practices; in fact, rather than removing barriers entirely, removing first-order barriers reveals the second-order barriers that exist for teachers.

Another challenge is the tension between the theoretical framework of social constructivism and the traditional, teacher-directed approach to teaching and learning found at TCS. Hibbing et al. (2014) indicated that the conservative viewpoint values authority, tradition, and order, and is not generally open to new experiences. However, the social constructivist perspective suggests that learning should be student-centred, active, and “involve sharing, comparing, and debating among learners and mentors” (Dagar & Yadav, 2016, p. 2). According to Ertmer (1995, 2005), this tension resides in teachers’ beliefs.

This change will be a leadership challenge. As teachers’ beliefs about technology begin to impact their willingness to use EdTech in a transformative way and as they begin to shift their thinking from

teacher-directed to student-centred teaching and learning, transformational servant leadership will be needed to ensure that they continue to move forward in the change process. However, it will be inspirational motivation in key moments of resistance or discouragement as well as my commitment to serve the teachers in their personal growth that will continue to move the OIP forward. In action, such leadership will involve continuing to reiterate the vision of students who are more engaged and are learning more deeply (Fullan, 2013), listening without judgment to teachers as they examine their beliefs and take risks (Holdsworth & Maynes, 2017; Davis, 2017), and effectively utilizing the guiding coalition as trusted colleagues to help lead the changes (Kotter, 1995).

Stage Three: Integration – the Refreezing

The goal of Stage Three is to refreeze (Schein, 2010) the new way of teaching and learning into the pedagogical culture of the school. Cawsey et al. (2016) referred to this stage as institutionalizing, Kotter (1995) referred to it as anchoring changes in the organization's culture, and Iveroth (2010) discussed stabilizing activities that are designed to ensure long-term behaviour changes. Changes in practice, self-efficacy, and beliefs developed in the intervention stage will be institutionalized as they refreeze or stabilize the school's culture through developing a shared vision for the integration of EdTech that reflects a pedagogical shift from low-level, teacher-directed technology use to high-level, student-centred technology integration.

What Will Be Done?

At this point, teachers will take their new knowledge back to their classrooms. Throughout the intervention stage, they will have engaged in constructing their knowledge through personal experiences involving professional learning groups and acquisition of technology skills, approached through the lens of social constructivism. Teachers will have gained the self-efficacy to introduce new EdTech, and the confidence to give students greater agency in their own learning; thus, there will ideally

be a shift on the continuum between teacher-directed and student-centred teaching as they re-create their own experience in their classrooms.

What Will Be the Impact?

The impact will be the development of “technology-enhanced, student-centred, learning environments” (Pedersen & Liu, 2003, p. 59) that focus on learning activities that are largely determined and guided by student inquiry. Teachers who have staunchly believed that they are what Hsu (2016) refers to as knowledge authorities in the classroom will begin to shift to EdTech supported, student-centred activities. This shift will reflect changes in beliefs about the purpose of EdTech and how it can be used to transform teaching. Individualized consideration will help facilitate this refreezing through integration because, through it, I will be aware of the continuum of teachers’ growth and will be able to encourage them to continue to pursue the vision of greater student engagement and learning.

What Are the Challenges?

Although this OIP is intended to address the Problem of Practice of empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning, the reality is that many teachers believe deeply that their role as the teacher is to actively direct their students’ learning. Tondeur et al. (2016) suggested that teachers may resist student-centred learning because it differs from their own learning experience or because they believe that their students are not self-motivated enough to learn in a constructivist environment. Hence, the main challenge in integration is that teachers’ beliefs about EdTech may not actually have changed, and they may still hold on to the notion of the teacher as the knowledge authority. This conundrum presents a leadership challenge that can only be answered by servant leadership, that is, through empowering teachers (Covey, 2006), nurturing their growth (van Dierendonck, 2010), and encouraging them go to beyond their own interests, concerns, or fears (Ebener & O’Connell, 2010). An overview of this change implementation plan can be seen in Appendix D.

Change Process Monitoring and Evaluation

The change plan described in the previous section must be both monitored and evaluated to determine the program's effectiveness and make changes as needed (Markiewicz & Patrick, 2016). The monitoring and evaluation process will follow the Plan-Do-Study-Adjust (PDSA) model, as seen in Figure 8 (Pietrzak & Paliszkiewicz, 2015), as teachers simultaneously use the PDSA model to implement changes to their TPACK. This section will describe the purpose of monitoring and evaluation, explain the difference between the two, then describe plans for both. Although evaluation is important, monitoring, with its emphasis on learning through continuous improvement, will be the focus of this OIP.

Leadership Focus: Humility

I consider monitoring and evaluating this change plan arguably the most challenging part as a leader because it will require me to assess teachers' progress using a strengths-based, non-judgmental approach that does not imply past incompetence. To me, this approach is the ultimate test of humility. van Dierendonck (2011) and Insley et al. (2016) identified humility as a key attribute of servant leadership, defining its characteristics as willingly soliciting others' contributions, recognizing others' expertise, and being modest about one's own accomplishments and position. Ebener and O'Connell (2010) identified humility as a key trait of servant leaders and suggested that practicing the virtue of humility builds character in the leader. Schein (2013) espoused a posture of humble inquiry in which the leader intentionally adopts an inferior status—that of supplicant—to request help in achieving organizational goals. Thus, although I am the designated change leader, I am humbly requesting that teachers fully engage in the potentially uncomfortable process of monitoring and evaluating their learning and personal growth, publicly recognizing that the change program can only be successful with their professional expertise and contributions.

Purpose of Monitoring and Evaluation

Markiewicz and Patrick (2016) suggested that monitoring and evaluation address a range of purposes, including results management, accountability, learning, program improvement, and decision making. In this OIP, learning is preeminent because the purpose of the change implementation plan is to enable teachers to learn new things and empower them to be willing and able to change; furthermore, Waylen et al. (2019) stated that, in fact, inadequate monitoring and evaluation limits learning. The leader will guide the overall change process with support from the guiding coalition; however, the monitoring and evaluation activities will involve teachers as active participants in the process, ensuring greater accuracy of the data collected (Markiewicz & Patrick, 2016). Jacobs et al. (2010) and Markiewicz and Patrick (2016) suggested that a participatory approach to monitoring and evaluation enables stakeholders to value the process as an opportunity to contribute to the organization's overall improvement. The PoP identifies the need to empower teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning, implying deeper changes than mere implementation or use; thus, the focus on teachers as active participants in all elements of the change process, including monitoring and evaluation, is intended to garner greater buy-in and longer-lasting impact.

Monitoring vs. Evaluation

The purpose of both monitoring and evaluation is to provide feedback or systematic information for improvement (Niyivuga et al., 2019; Jacobs et al., 2010). Although often used interchangeably (Markiewicz & Patrick, 2016), the distinctions between them are important in change implementation. Niyivuga et al. (2019) defined monitoring as continuous data collection, Jacobs et al. (2010) stated that the purpose of monitoring is constant development and improvement throughout a change initiative, and Gopichandran and Indira Krishna (2013) defined monitoring as ongoing and close supervision to compare what is to what should be. Evaluation, though also a data collection system, is done

periodically, and its purpose is for judgment against specific benchmarks (Gopichandran & Indira Krishna, 2013). Although monitoring and evaluation are both necessary forms of feedback for successful implementation of change programs, they are distinct in that monitoring is part of the process of planning and implementation (Jacobs et al., 2010). In contrast, evaluation is reflective, assessing the effectiveness of past occurrences to make appropriate changes (Niyivuga et al., 2019).

For this OIP, more emphasis will be put on monitoring progress than evaluating performance because the purpose is to empower teachers to make changes to their own teaching practice; thus, it is important that they develop consistent routines to monitor their own teaching and learning goals and make adjustments in real time (Robinson et al., 2017). Evaluation will be done at significant points to ensure real progress is being made and that the change plan is still following the defined path. Teachers will report their progress through a questionnaire that includes both anecdotal responses and numerical evaluations. Responses will be compiled in a spreadsheet to track the progress of the overall change program and ensure teachers are setting SMART (Specific, Measurable, Attainable, Realistic, Timely) goals (Lawlor & Hornyak, 2012).

Continuous Improvement

This improvement plan is part of a continuum of progress intended to focus on teachers' strengths and empower them to be better teachers. Monitoring will be undertaken within the framework of Continuous Improvement Research (CIR), a method Tichnor-Wagner et al. (2017) described as identifying and implementing small changes by using continuous PDSA cycles to set goals and measure successes. Unique to CIR is the notion that the researcher is involved in the change process, rather than being an objective observer, which is significant because it allows the change agent as researcher to analyze the change process, engage in the development of new solutions, intervene to make necessary changes, then begin the cycle again (Shakman et al., 2017).

Teachers and the change leader will engage in simultaneous PDSA cycles to guide the continuous improvement process and monitor and evaluate change. Thus, the organization can experience continuous improvement in tandem with teachers' improvement and growth. Using the PDSA Cycle Form found in Appendix E, teachers will use the goals they set during professional development in Stage One of the Change Implementation Plan to identify and implement the series of small changes in the CIR. As well, the guiding coalition will provide coaching and feedback based on teachers' goals. Teachers will compile the data they collect into a change progress portfolio that they will use as part of monitoring and evaluation to identify personal growth and share their progress with their colleagues. As the leader, I will support teachers through this process by giving teachers time during staff meetings to record their progress and by assigning peer coaches from the guiding coalition to work with the professional learning groups described in Stage Two of the Change Implementation Plan.

Planning to Monitor and Evaluate

The planning stage will begin with gathering information regarding teachers' current EdTech practices to create a baseline for individual teachers and the school as a whole (Markiewicz & Patrick, 2016). As much as possible, it will be important to ensure first-order issues of resourcing—particularly longstanding requests—have been reconciled before beginning the actual change process, so teachers have a “clean slate” of expectations. Teachers will use the information they gathered in Stage One (Appendix B) to define baselines describing their current EdTech use for future comparison. The change leader will determine baselines regarding EdTech use through questionnaires regarding first- and second-order issues, and once these baselines are established, monitoring and evaluation frameworks can be developed and defined.

Doing the Monitoring and Evaluation

Monitoring and evaluation will be approached through a social constructivist lens; that is, teachers will be both encouraged and required to work with colleagues to construct new understanding and new practices. As Markiewicz and Patrick (2016) described, monitoring will be done through observation, stories of change, workshops, and case studies, recognizing the social complexity of learning and encouraging multiple perspectives and voices throughout the change process. Evaluation will be done at strategic points to ensure compliance with the change plan and to celebrate success. The monitoring process as described will allow me to continue to build relationships with teachers and to exercise humility as I make humble inquiries, encourage teachers, and celebrate their learning.

Monitoring

Monitoring is more important than evaluation in this change plan because of its definition as the continuous collection of data to inform practice (Jacobs et al., 2010; Gopichandran & Indira Krishna, 2013; Niyivuga et al., 2019) aligns with the primary goal of continuous growth for teachers. Waylen et al.'s (2019) simple, three-question framework will be used to guide this monitoring program both for the change agent and for the teachers.

What is monitored? Teachers will track the various EdTech resources they have used—either new technology or familiar technology used differently—and new or improved teaching strategies utilizing EdTech they have implemented. In addition to collecting data about EdTech use and teaching strategies, the continuous data collection as part of monitoring will also include an assessment of perceived success that will be used for future evaluation. The change leader will likewise monitor the teachers' progress to ensure that they continue to try new technologies and/or to use familiar technologies in different ways.

How is monitoring carried out? Data will be collected using the forms such as Appendix F. Teachers will track technologies they use, their pedagogical application, and what curricular content

knowledge is improved or impacted, and use reflective questions and a scale ranking to understand and quantify their progress. These forms will be included in teachers' portfolios to monitor their progress and share with their colleagues. I will also meet with teachers to discuss and analyse their progress to determine pacing, give guidance, and manage any distress the process may cause.

How is monitoring information used in decision-making? The questions listed in the monitoring framework in Appendix G will be used to inform the change leader's monitoring activities. For example, the question identified in Step 1 of how teachers currently monitor program implementation will be the focus of conversations with teachers at the beginning of the change process. Teachers who are habitually reflective will have their own monitoring method that can be modified for this program; alternately, teachers who do not intentionally or consciously monitor their own program implementation will be guided to create or research an appropriate tool. Thus, answers to the monitoring questions will give insight into teachers' approaches to program implementation, in general, that will be applied to this implementation of EdTech. Data collected from the teachers and the change leader will be used to adjust timelines, pace changes, determine first-order resourcing of EdTech, and prioritize professional development needs.

Evaluation

In addition to the continuous data collection involved in monitoring, it is important to have designated times to stop and evaluate progress against defined goals and expectations (Pietrzak & Paliszkiewicz, 2015) to hold both teachers and the change leader accountable for their progress (Markiewicz & Patrick, 2016). At this point, data has been collected through the initial planning stages and throughout the "doing" stage, and both teachers and the change leader should have sufficient information to do a progress evaluation based on goals set in Stage One of the Change Implementation Plan. The evaluation will be participatory, defined by Markiewicz and Patrick (2016) as one where

evaluations focus on collaboration among stakeholders and on learning where evaluation serves to enable the school to learn about its own functions.

What is evaluated? The change leader will use questions such as those listed in the evaluation framework in Appendix H to evaluate the change program, teachers' progress and evaluation process, and data collection. Teachers will evaluate their own progress measured against the individual goals they set in Stage One of the Change Implementation Plan.

How is evaluation carried out? Markiewicz and Patrick (2016) stated that both formative evaluation, which happens during the change program, and summative evaluation, which happens at the end of the change plan, should be designed to address the elements of appropriateness, effectiveness, efficiency, impact, and sustainability. The data will be collected using purposive sampling through interviews, group discussions, workshops, and similar subjective experiences. As recommended by Schein (2013), questions will be asked in humble inquiry with genuine curiosity and appreciation, designed to build relationships. Throughout this change program, there is an emphasis on collaboration, collegial support, and collective learning; thus, it aligns with the purposes and theoretical framework to have part of the evaluation done by peers, specifically the guiding coalition. The evaluation will have three layers: self-evaluation for teachers to reflect on their learning and progress, peer-evaluation for teachers to give specific feedback to teammates, and leader-evaluation for the change leader to evaluate the overall program's effectiveness and impact.

How is evaluation information used in decision-making? Because the evaluation process is specific and intentional (Markiewicz & Patrick, 2016), mid-change data collected will be used to evaluate progress and revisit the change program goals, and post-change data will be used to determine the effectiveness of the change model and whether it can be used for future organizational change.

Studying the Monitoring and Evaluation Data

The data will be studied through the lens of monitoring and evaluation as a learning experience, adopting a strengths-based approach to improvement as a personal and professional growth opportunity for teachers (Markiewicz & Patrick, 2016). Teachers will come together to synthesize their own data and analyze it against their own personal goals connected to the SAMR model (Puentedura, 2006) to determine the next steps and how to build their own capacity for change and improvement. Shakman et al. (2017) proposed devising a formal protocol to direct inquiry discussions and to train teachers how to analyze their data; for example, teachers may meet in professional learning groups to analyze the data, beginning with simple analysis that describes exactly what is seen and moving to more complex analysis that infers relationships or causes. Furthermore, they advocate for judgment-free data analysis that focusses on improvement, not criticism.

Acting on the Monitoring and Evaluation Data

In response to the data analysis, teachers will decide whether to make changes to their plans, set new goals, or continue moving forward towards their original goals. For example, Shakman et al. (2017) suggested they may consider whether sufficient data was gathered to accurately represent EdTech use, if the changes were significant enough to be accurately reflected in the data, if the data collected call for an amendment of the change process, or if the change should be tested on a larger scale. The questions teachers consider should reflect both the change program and the method of collecting data, and they should result in an action plan for the next stage of the change program.

Leading, Flexing, and Changing the Change Plan

Shein's (2013) notion of humble inquiry frames the process of monitoring and evaluation. By asking questions without judgment, with genuine interest, and without preconceived assumptions, I intend to show myself trustworthy and to underscore my commitment to teachers' emotional well-being through what will be, for some, a very challenging time of changing beliefs about their teaching

practice. Consequently, if the data collected through monitoring and evaluation indicates that more time is needed to determine baselines, implement initial changes, or even introduce the change plan, there is space within the program to be flexible because it is designed to empower teachers to change, rather than to make changes to the organization itself. Transformational leadership is about inspiring teachers to make changes, and servant leadership is about humbly listening to the teachers and changing the plan as necessary to help them achieve their goals.

Plan to Communicate the Need for Change and the Change Process

Ford and Ford (1995) stated that “change is created, sustained, and managed in and by communications” (p. 560); thus, it is difficult to overstate the importance of communication in the change process. The discussion of communication is framed within Ford and Ford’s (1995) theory of conversations as essential conduits of intentional change and aligns the four types of conversations with Lewin’s Three-Stage change model (Schein, 2010; Cawsey et al., 2016); furthermore, the overall approach to communication corresponds to Lewin’s Three-Stage Change model (outlined in table form in Appendix I) wherein communicating the need for change is part of the unfreezing stage, the communication plan is part of the change stage, and the closing communication is part of the refreezing stage. The leadership focus for the communication plan is exhibiting and garnering trust as a key purpose of communication. As a leader, I will need to have to help teachers thrive during the change process (Tanner & Otto, 2016; van Vuuren & Elving, 2008).

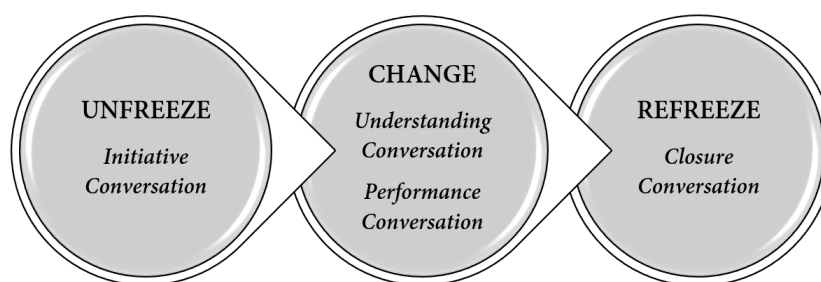
Framing Communication

The literature indicates that there are many different purposes for and forms of communication. van Vuuren and Elving (2008) stated that it builds trust between leader and teacher, Mills (2009) said that it enables people to make sense of change, Cawsey et al. (2016) discussed its importance in conveying the need for change, and Tanner and Otto (2016) and Campbell et al. (2015) indicated that it is vital in overcoming resistance to change. As important as these stated purposes are, Ford and Ford’s

(1995) discussion of the importance of conversations in the process of intentional change resonates most with me and will inform how I communicate throughout this change program. Ford and Ford (1995) recognized that organizational change happens within the context of social interactions and that change is driven by communication, rather than communication being a component of a change program. The authors identify four types of conversations that identify stages of change and, as in Figure 11, can be connected to Lewin's Three-Stage Change Model (Schein, 2010; Cawsey et al., 2016).

Figure 11

Conversations and the Change Model



Note: Adapted from Ford and Ford (1995) and Lewin's Three-Stage Change Model (Cawsey et al., 2016; Schein, 2010)

This model addresses the Problem of Practice—empowering teachers at TCS to understand the capacity of EdTech to shift the focus of their practice from teacher-directed to student-centred learning—because communication through conversation will enable teachers to articulate their underlying beliefs that can then be acknowledged and addressed within the change program. Viewed through the lens of social constructivism, conversations can be seen as the vehicle for constructing change through knowledge and understanding.

Leadership Focus: Trust

One purpose of communication is to facilitate understanding and create trust between the change leader and those implementing the change (van Vuuren & Elving, 2008). How and what a leader communicates can have a significant impact on teachers' perception of the leader's trustworthiness;

that is, if there is a difference, real or perceived, between the leaders' words and actions, followers will lose trust and the change plan will fail (Cawsey et al., 2016; Tanner & Otto, 2016).

Trust is particularly important because change frequently produces resistance and even hostility in the people required to make changes (Campbell et al., 2005; Tanner & Otto, 2016). Heifetz (2006) and Schein (2010) indicated that organizational change could result in stress and anxiety; thus, authentic and trustworthy leadership is vital, and honest and transparent communication will have a positive impact on relationships, leading to greater support for organizational change (Tanner & Otto, 2016). However, when the primary goal of communication is inclusion, the message to teachers is that they are valued and trusted as integral members of the school, and trust is established as a two-way conversation between colleagues who have the same mission.

Communicating the Need for Change: Unfreeze

The initial communication of the change plan is designed to convey the purpose and urgency of the change, and the effectiveness of the initial communication is key to activating the change and getting initial buy-in from the stakeholders (Cawsey et al., 2016). In this case, the sense of urgency being created is less about needing to fix a problem and more about being purposeful about using EdTech to better align current teaching practices with a student-centred approach. Consequently, the communication of the change plan will focus on teachers moving forward on a continuum that connects current practices with new ways of thinking about EdTech.

The formal beginning to the specific change program will be at a pre-determined staff meeting where I will announce the purpose, structure, and process of the changes in the approach to education technology. Ford and Ford's (1995) phrase "initiative conversation" describes the initial conversation that begins with an assertion or statement of purpose. In some ways, the need for change has already been communicated because this focus on EdTech is part of a continuum of improvement that was highlighted by the experience of remote learning in the COVID-19 pandemic; as well, many teachers

have participated in EdTech professional development that has highlighted the need to improve EdTech use at TCS. This conversation will be the beginning of the unfreezing stage (Cummings et al., 2016; Hussain et al., 2018).

The leadership focus and goal for communication is trust, and establishing trustworthiness must begin with the initiating conversations. Thus, the introductory communication of this plan to focus on EdTech will be intentionally respectful of teachers' commitment to excellence in their teaching, emphasizing that the OIP focusses on change in teaching practice that is part of continuous growth and professional development, rather than an overarching organizational change.

The Communication Plan: Change

The communication plan is also part of the Change stage of Lewin's model, utilizing Ford and Ford's (1995) *Conversations for Understanding* and *Conversations for Performance* as a framework for communication (see Appendix I). *Conversations for Understanding* are intended to generate understanding through examining assumptions, developing a common language, and creating a shared context and would be conducted informally by seeking out individuals or groups of teachers to ensure clarity on the purpose or details of the activities or expectations. *Conversations for Performance* promote action, in this case, intentionally moving the goals of this OIP forward by challenging teachers' integration of EdTech and their beliefs about teaching and learning and by encouraging teachers to action when they have become stagnant or discouraged in the change process. Communication is used as part of a developmental approach to second-order change; that is, because second-order changes challenge deeply held beliefs (Ertmer, 1999), often causing uncertainty and insecurity, effective communication is an essential component of the success of the change plan (van Vuuren & Elving, 2008). The result of effective communication is improved employee satisfaction, greater willingness to engage in change plans, and greater trust in the change leader (Lewis, 2011; Cawsey et al., 2016).

This communication plan will include formal and informal communication strategies. Formal communication includes official statements regarding the details of the change, policies, timelines, and such, which are important in the initial stage of implementing change, often setting the tone for the type and scope of the change plan (Cawsey et al., 2016). Informal communication includes conversations that happen during day-to-day interactions, either planned or unplanned, that are used as opportunities to communicate change plans, providing opportunities for the change leader to hear concerns and convey enthusiasm for the change (Lewis, 2011; Cawsey et al., 2016). Except for specific incidents where formal, one-directional communication is appropriate—for example, to provide information about a specific professional development opportunity—communication will be dialogic and conversational, emphasizing discussion and teacher engagement during staff meetings and by email.

Ford and Ford's (1995) types of conversations provide the strategy for communication, supporting my leadership focus of building trust through clear communication and the transformational leadership feature of individualized consideration. Additionally, Lewis (2011) suggested that information dissemination, soliciting input, and socialization are key communication processes that provide direction and guidance to the communication plan, and Smith (2021) indicated that a good communication plan needs to have both high-level strategies that describe the “why” and “what” and practical tactics that describe the “how” and “who.”

Information Dissemination

Information dissemination is used to facilitate understanding of the purpose and process of the change initiative, create common understanding and language, and reduce the uncertainty that may arise from multiple interpretations of events or behaviours (Lewis, 2011). However, information dissemination must not masquerade as communication. van Vuuren and Elving (2008) noted that disseminating information addresses first-order information-providing, which is important, but as the

goal of this OIP is second-order change, it is vital that this information dissemination does not supplant more meaningful communication. As the leader, if I stop at merely giving information, I will lose both trust and teacher engagement in the change process.

Strategy. Information regarding the shift in how EdTech is approached will be communicated continuously and clearly and in a way that specifies the purpose and scope of the change initiative. By communicating clearly and candidly, my goal is to build trust in my leadership so teachers will feel that they are valued in the change process (Mills, 2009), reducing uncertainty and the possibility of misinterpretation.

Tactics. Information dissemination regarding the change initiative will take place through formal communications. There will be regular emails that remind teachers of the purpose of the EdTech focus and encourage them to continue moving forward; as well, there will be time taken at staff meetings to reiterate the common understanding of how EdTech is being approached at TCS. By continuously disseminating information, the messaging will be clear that this is an important change and that it is something teachers should always be working on. Formal communication will also highlight teachers' growth experiences and celebrate teachers' successes because by using the formal avenues of information dissemination, all teachers will be informed of what is defined as success and growth, enabling them to follow a model for their own progress.

Soliciting Input

Soliciting input from teachers is important because it allows the opportunity to address misconceptions, negative emotions, and reasons for resisting change (Campbell et al., 2105; Lewis, 2011). By focussing on conversations as the primary mode of communication, I intend is to assure teachers that their continuous input is valued and valuable. I know that teachers will only invest in this change program if they feel that it is important to their own pedagogical development, and they will only be engaged if they know the process is participatory.

Strategy. Teachers will have continuous opportunities to communicate their successes and concerns about the change program, and, when appropriate, their communication will lead to changes in the program. The goal of communication is mutual understanding (van Vuuren & Elving, 2008), and it is incumbent on the change leader to ensure that the communication process is both dialogic and founded on reciprocal care and concern (Campbell et al., 2105).

Tactics. Soliciting input from teachers will be done formally through an evaluative process (Markiewicz & Patrick, 2016) and informally through planned or unplanned conversations (Ford & Ford, 1995). Although van Vuuren and Elving (2008) cautioned that informal communication should be limited because it potentially undermines controlled messaging through formal communication, TCS is a small school with a very close-knit teaching staff, making informal conversations more appropriate and effective in most cases. The guiding coalition will also be involved in soliciting input through individual or small-group conversations. This input will enable me to understand teachers' concerns and learn how to serve them better.

Socialization

Lewis (2011) posited that one potential result of organizational change is that people may feel that their role or fit in the organization has altered or that they have become disconnected from the school's culture. Throughout this OIP, teachers at TCS will be asked to question their practices and beliefs about EdTech and shift from teacher-directed to student-centred learning. For some teachers, this shift will challenge core beliefs about themselves and, possibly, about their perception of the school's values and culture, especially if they align with the school's self-stated traditional approach to education evidenced by teacher-directed learning activities. Because change occurs in the context of social interaction (Ford & Ford, 1995), intentional socialization can be used to help teachers reconnect with the school's culture and values.

Strategy. Communication through socialization is described by Lewis (2011) as specifically for those whose roles have changed within the organization; however, it is also relevant for teachers at TCS who will be challenged to redefine their role as teacher in the classroom. Socialization will continuously align the change program with the school's mission, vision, and values.

Tactics. Socialization will be facilitated through conversations between teachers who have made changes that have caused disquiet or uncertainty and teachers whose practices already align with the goals of this change plan, namely, the guiding coalition. The monitoring process should make evident which teachers perceive their roles to have changed significantly throughout the change program. For example, a teacher may have a deeply held belief that their role is to be the authority in all areas of teaching and learning; thus, if that teacher is now told that they are to use a student-centred approach to learning, such as inquiry-based learning, they may feel uncertain as to their purpose in the classroom. Socialization to this new way of thinking about teaching and learning will be communicated through ongoing conversations to help them understand their role in the classroom and the school (Lewis, 2011).

Storytelling is another tactic of socialization (van Vuuren & Elving, 2008; Langer & Thorup, 2006); it is described by Ford and Ford (1995) as Conversation as Change Agent. Teachers will be encouraged to tell their own stories of success and challenge, resulting in a grand story of the impact of the change program (van Vuuren & Elving, 2008). Regular opportunities will be given at bi-weekly staff meetings and semi-annual in-house professional development days for teachers to tell these stories, either spontaneously or by request. By hearing these stories, all teachers will be socialized to a new way of thinking about the changes being made and how EdTech becomes a new story in the school's metanarrative.

Communicating the End: Refreeze

The final phase reflects Lewin's refreezing stage and involves Ford and Ford's (1995) Conversations for Closure. The change program will close with a celebration of growth and success

through a discussion of new ways teachers have implemented EdTech into their teaching and learning practices, ideally a discussion of how teachers have shifted from teacher-directed to student-centred pedagogy. According to the timeline, this discussion would happen in June of the implementation year, but if the timeline changes, a specific time would be designated to have closure. By ensuring a conversation of closure, the changes to beliefs and practices around EdTech implemented throughout this change program will be institutionalized and become part of the new school culture.

Communicating the need for change and the change plan can be done formally or informally, in oral or written form, but it must be purposeful, frequent, consistent, and trustworthy. Communication defines the vision and process for change (Cawsey et al., 2016), it helps people understand the purpose for change, and it enables them to make sense of the change itself (Mills, 2009; van Vuuren & Elving, 2008).

As described by Schein (1996, 2010), Lewin's Three-Stage Change Model has been utilized as a unifying model throughout the change plan as seen in Table 2, including its monitoring, evaluating, and communicating. Its simplicity allows it to encompass the complexity of a change initiative that focusses on teachers changing, not just introducing of a new EdTech plan.

Table 2

Lewin's Three-Stage Model and the Organizational Improvement Plan

Lewin's Change Model	Unfreeze	Change <i>Cognitive Restructuring</i>		Refreeze
The Change Plan	Investigation	Intervention		Integration
PDSA	Plan	Do	Study	Act
Communication	Communicating the need for change	The communication plan		Communicating the end of the change initiative
	<i>Initiative Conversation</i>	<i>Understanding Conversation</i>	<i>Performance Conversation</i>	<i>Closure Conversation</i>

Note. This table aligns Lewin's Three-Stage Change Model (Schein, 2010), the PDSA continuous change model (Tichnor-Wagnor, et al., 2017), and Ford and Ford's (1995) conversations for change model. From

Organizational Culture and Leadership (4th ed., p. 300), by E. H. Schein, 2010, Jossey-Bass. Copyright 2010 by John Wiley & Sons, Inc. Adapted from “Continuous improvement in the public school context: Understanding how educators respond to plan–do–study–act cycles,” by W. Tichnor-Wagner, J. Wachen, M. Cannata, and L. Cohen-Vogel, 2017, *Journal of Educational Change*, 18(4), p. 469 (<https://doi.org/10.1007/s10833-017-9301-4>). Copyright 2017 by Springer Science+Business Media Dordrecht. From “The role of conversations in producing intentional change in organizations,” by J. D. Ford and L. W. Ford, 1995, *The Academy of Management Review*, 20(3), p. 547 (<https://doi.org/10.2307/258787>). Copyright 1995 by Academy of Management Review.

Next Steps and Future Considerations

The most fundamental purpose of this organizational improvement plan is to inspire teachers at TCS to reach further, challenge their thinking, and change for the better. The process describes the leader I strive to be: inspirational, relational, and committed to being better for the sake of the school community. In an almost prescient moment of inspiration, I chose education technology as the focus for this OIP two months before the COVID-19 pandemic closed schools in March 2020, making the research urgent and relevant in a way I could never have foreseen. Although the school’s technology use was adequate, including a one-to-one laptop program and desktop computers in classrooms for teachers, it became evident very quickly that this was insufficient to support teachers as they began to teach remotely. TCS was able to purchase laptops for teachers, and there were enough tech-savvy teachers on staff that we were able to ensure continuity of teaching and learning during this isolation period. However, this crisis highlighted weaknesses in the approach to EdTech that we were heretofore unaware of, which serves as the basis for the next steps and future considerations.

Most evident is the need for a board-approved strategic plan that will allow for cohesive and consistent decision-making regarding the importance of EdTech and how it will be resourced, both human and material. For teachers, these issues are experienced as first-order barriers to the effective

use of EdTech. Ertmer (1999) and Hsu (2016) state that teachers need to have consistent and reliable technology, training, and administrative support before they can consider engaging in higher-level technology use. To date, it has been evident that there are sufficient fiduciary resources and the will of the board to move forward, but there are insufficient human resources to implement a school-wide audit of the technology that is being used and to determine what should be purchased for the greatest impact on teaching and learning.

As a new leader in the school, I am still earning the trust of the teachers to see to their best professional interests in EdTech. I am committed to the tenets of transformational leadership—charismatic role-modeling, individualized consideration, inspirational motivation, and intellectual stimulation (Gumusluoglu & Ilsev, 2009; Hauserman & Stick, 2013; Northouse, 2019)—to challenge teachers to change their beliefs about the purpose and impact of education technology in teaching and learning. I am equally committed to the tenets of servant leadership as modelled by Jesus Christ and the Apostle Paul, especially the values of placing others first and dedication to serving the community (Davis, 2017; Ebener & O’Connell, 2010). I believe that combining these two leadership styles is very powerful and is needed for this organizational improvement plan to be successful.

This OIP has been focussed exclusively on teachers as the stakeholders in this change process; however, it is important to note that the parents are stakeholders, as well. As an independent school, we must consider parents as stakeholders because they pay tuition, and it is important from the business perspective that we strive to meet the needs of the parents, so they continue to re-enrol their children. In 2015, a consultant was hired to help develop a strategic plan, and in the parent surveys, it was evident that most parents wanted the school to use technology more effectively. Thus, a future consideration would be to follow up with parents regarding their expectations of technology use, either through a school-wide survey or through creating focus groups. Furthermore, TCS may consider creating

a parent advisory groups, using parents who are experts in technology to advise the school regarding further technology development.

TCS is a conservative community that has changed slowly and sometimes reluctantly. The COVID-19 pandemic, however, has required the school to change in many ways and consider many changes that it would not have otherwise. For example, the school purchased laptops for teachers during the remote learning period because many teachers had insufficient personal resources to teach from home. Leveraging the current wisdom of not letting a good crisis go to waste, there have been many discussions about ensuring that the changes teachers were required to make regarding technology use can become catalysts to move forward, rather than a temporary means to manage an abnormal situation. Thus, I have already had a “soft launch” of this change program as I have encouraged teachers to continue to grow their EdTech practices, providing professional development opportunities and laying the groundwork for the guiding coalition (Kotter, 1995) of teachers that will form the core leaders for this change.

Lastly, before fully implementing this change plan, it will be important for me to understand how much and how quickly the teachers will be able to absorb change. In initially imagining this change program, a one-year timeline seemed appropriate. However, I need to consider how many changes the teachers are expected to implement and prioritize which changes are most important. Heifetz (1994) emphasizes that leaders should give the work of change to the people who are implementing the changes. If it is important that teachers internalize the changes—that is, not just make changes to practice, but truly change their beliefs about teaching and learning using EdTech—it will potentially be a long process. The results will be worth waiting for, though, because learning to thrive through this adaptive change will create a paradigm by which teachers will be able to make other adaptive changes, empowering them to be innovative risk-takers in the service of the students in their care.

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Appendix A: Sample Teacher Questionnaire Used in Stage One

	SAMR model levels	Describe your learning activities at each level
Enhancement	Substitution <i>Tech acts as a direct tool substitute, with no functional change</i>	
	Augmentation <i>Tech acts as a direct tool substitute, with functional improvement</i>	
Transformation	Modification <i>Tech allows for significant task redesign</i>	
	Redefinition <i>Tech allows for the creation of new tasks, previously inconceivable</i>	

Note. From *Transformation, technology, and education*, by R. Puentedura, 2006.

(<http://hippasus.com/resources/tte/>). Copyright 2006 by Ruben R. Puentedura.

Appendix B: Sample Teacher Questionnaire

<i>I use technology...</i>	usually	often	sometimes	rarely
... for productivity (e.g. word processing, spreadsheets)				
... for information presentation (e.g. PowerPoint, digital media)				
... to facilitate teaching specific concepts (e.g. tutorials, interactive instructional websites)				
... to collect student work (e.g. through Google Classroom)				
... for professional learning (e.g. webinars, TED Talks)				
... to support various learning styles (e.g. use of media for auditory and visual learners)				
... for collaborative learning activities (e.g. Google Docs)				
... for engagement activities (e.g. Kahoot)				
... lesson preparation (e.g. planning, creating worksheets)				
<i>Students choose to use technology...</i>				
... for research (e.g. Google)				
... for content learning (e.g. YouTube)				
... to work collaboratively (e.g. Google Docs)				
... to present work (e.g. videos, PowerPoint)				
... for interactive learning activities (e.g. Quizlet)				
... for productivity (e.g. tracking homework)				
<i>My greatest technology success is...</i>				
<i>My greatest technology frustration is...</i>				

Note. Adapted from “7.2 Interpretation of Research on Technology Integration in Teacher Education in the USA: Preparation and Current Practices,” by A. T. Ottenbreit-Leftwich, P. A. Ertmer, and J. Tondeur, 2014, In *International Handbook of Interpretation in Educational Research*, p. 1247.

(https://doi.org/10.1007/978-94-017-9282-0_61). Copyright 2014 by Springer Science+Business Media

Dordrecht.

Appendix C: TPACK Data Collection

Details

Technology	
Pedagogical Application	
Content Knowledge Impact	

How frequently do you use the technology?

1 – rarely	2 – sometimes	3 – often	4 – usually
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How effectively did you use it?

1 – poorly	2 – adequately	3 – satisfactorily	4 – successfully
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Reflection

What went well?	
What was tricky?	
What will you do better?	

On a scale of 1 to 5, how useful was it?

1 2 3 4 5

Appendix D: The Elements and Impact of the Change Plan

Stage	Lewin's Three-Stage Change Model	Strategy	Impact on Beliefs	Resources Needed	timeline
investigation: examining current practices	unfreeze	teachers... ...answer surveys, ...interview colleagues ...reflect on tech use	surveys reveal first- and second-order barriers to integrating EdTech	time to... ...develop and implement surveys ...reflect on current practice	September to November
intervention: developing TPACK	change (cognitive restructuring)	TPACK through... ...professional learning groups ...external professional development	TPACK challenges beliefs about teacher- vs. student-centred learning	funds for... ...professional development time for... ...professional learning groups	December to March
integration: creating shared vision and shared practices	refreeze	teachers... ...collaborate to create repository of EdTech learning activities	teachers understand EdTech can transform learning activities	time for... ...teacher collaboration funds for... ...continued pro-d, as needed	April to June

Note. This figure describes the connection between Lewin's Three-Stage change model and the elements of the change plan described in this OIP.

Appendix E: Sample form from PDSA facilitation guide

PDSA Cycle Form

Cycle #:

Cycle focus:

Aim: What are you trying to accomplish?

--

Predictions: What do you think will happen?

1.	
2.	
3.	
4.	

Details: What exactly will you do? How will data be collected?

Test Details	Data Collection Details

Next Steps: What will be your next cycle? or your next action?

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Note. Adapted from “Continuous improvement in the public school context: Understanding how educators respond to plan–do–study–act cycles,” by W. Tichnor-Wagner, J. Wachen, M. Cannata, and L. Cohen-Vogel, 2017, *Journal of Educational Change*, 18(4), p. 469 (<https://doi.org/10.1007/s10833-017-9301-4>). Copyright 2017 by Springer Science+Business Media Dordrecht.

Appendix G: The Monitoring Plan

Steps		Focus of Monitoring	Monitoring Question
1.	Identify Focus	teacher learning developing self-monitoring processes	To what extent do teachers see the focus on EdTech as important to professional development? How do teachers currently monitor program implementation? What kind of self-monitoring process or tool can be developed to ensure buy-in and accuracy?
2.	Develop performance indicators and targets	teacher EdTech use development of SMART goals (Lawlor & Hornyak, 2012) SAMR taxonomy	How do individual teachers use EdTech for teaching and learning? How will teachers monitor Specific, Measurable, Attainable, Realistic, Timely (SMART) goals? Where are teachers currently on the SAMR taxonomy? What is their target?
3.	Identify data collection processes and tools	data collection	How will teachers monitor their own progress? How will the change leader monitor progress?
4.	Determine responsibilities and timeframes	teacher accountability reasonable timeframes for change implementation	Who will teachers be accountable to for continuous monitoring? What is a reasonable timeline for accurate data collection?

Note. Adapted from *Developing monitoring and evaluation frameworks* (p.71), by A. Markiewicz and I. Patrick, 2016, Sage. Copyright 2016 by SAGE Publications, Inc.

Appendix H: The Evaluation Framework

Aspects of Evaluation	Focus of Evaluation	Guiding Questions
Evaluating the Change Plan	the plan's effectiveness	<ul style="list-style-type: none"> • What elements of EdTech are being investigated? • How will the effectiveness of the change plan be assessed? • Is this the best way to make changes to the EdTech program? • What will be the impact on teaching and learning? • Will the changes be lasting and sustainable?
Evaluating the Teachers	how teachers will self-evaluate and be evaluated	<ul style="list-style-type: none"> • At what points will evaluation take place? • How will self-evaluation differ from program evaluation? • Which aims or goals will be evaluated at which point? • How will peer evaluation be done?
Evaluating the Data Collection	the data collection process	<ul style="list-style-type: none"> • What formal devices will be used to collect and analyze data? • What guiding questions will arise from the data? • How does the data collection and analysis process reflect the goals of learning and participation?

Note. Adapted from *Developing monitoring and evaluation frameworks* (p.90), by A. Markiewicz and I.

Patrick, 2016, Sage. Copyright 2016 by SAGE Publications, Inc.

Appendix I: The Communication Framework

Step	Lewin	Ford & Ford	Purpose	What It Looks Like
Communicating the need for Change	Unfreeze	Initiative Conversation	initial assertion or statement of purpose	<ul style="list-style-type: none"> change leader introduces the change program in a staff meeting initial statement describes purpose, proposed timeline, communication plan, monitoring, and evaluation, etc.
Communication Plan	Change	Understanding Conversation	generating understanding, problem-solving	<ul style="list-style-type: none"> continuous conversations with teachers to clarify assumptions and misunderstandings guiding coalition will talk to each teacher to ensure understanding of program and process change leader will address questions regularly in staff meetings explaining specifics for each teacher from the generalities of the program
		Performance Conversation	promote action move goals forward	<ul style="list-style-type: none"> change leader will engage in specific and timely conversations with teachers about issues about beliefs and second-order barriers conversations can be formal as a result of evaluation or informal during monitoring conversations will be documented and become part of teachers' portfolios to indicate progress or areas for growth
Communicating the End	Refreeze	Conversations for Closure	formal completion of the change program	<ul style="list-style-type: none"> designated staff meeting to formally close change program post-mortem discussion of what needs to be let go and what needs to be continued discussion to relate learning and experiences to the larger context of the school and generalize the process to other change initiatives

Note. From *Organizational Culture and Leadership* (4th ed., p. 300), by E. H. Schein, 2010, Jossey-Bass.

Copyright 2010 by John Wiley & Sons, Inc. From "The role of conversations in producing intentional

change in organizations," by J. D. Ford and L. W. Ford, 1995, *The Academy of Management Review*,

20(3), p. 547 (<https://doi.org/10.2307/258787>). Copyright 1995 by Academy of Management Review